

CHAPTER 4

POINT AND NONPOINT SOURCE CHARACTERIZATION OF THE HOLSTON RIVER WATERSHED

4.1 Background.

4.2. Characterization of HUC-10 Subwatersheds

4.2.A. 0601010401 (Holston River)

4.2.B. 0601010402 (Cherokee Lake)

4.2.C. 0601010403 (Holston River)

4.1. BACKGROUND. This chapter is organized by HUC-12 subwatershed, and the description of each subwatershed is divided into four parts:

- i. General description of the subwatershed
- ii. Description of point source contributions
- ii.a. Description of facilities discharging to water bodies listed on the 2004 303(d) list
- iii. Description of nonpoint source contributions

The Tennessee portion of the Holston River Watershed (HUC 06010104) has been delineated into three HUC 10 (10-digit) subwatersheds, each of which is composed of one or more HUC-12 subwatersheds.

Information for this chapter was obtained from databases maintained by the Division of Water Pollution Control or provided in the WCS (Watershed Characterization System) data set. The WCS used was version 2.0 (developed by Tetra Tech, Inc for EPA Region 4) released in 2003.

WCS integrates with ArcView® v3.x and Spatial Analyst® v1.1 to analyze user-delineated (sub)watersheds based on hydrologically connected water bodies. Reports are generated by integrating WCS with Microsoft® Word. Land Use/Land Cover information from 1992 MRLC (Multi-Resolution Land Cover) data are calculated based on the proportion of county-based land use/land cover in user-delineated (sub)watersheds. Nonpoint source data in WCS are based on agricultural census data collected 1992–1998; nonpoint source data were reviewed by Tennessee NRCS staff.

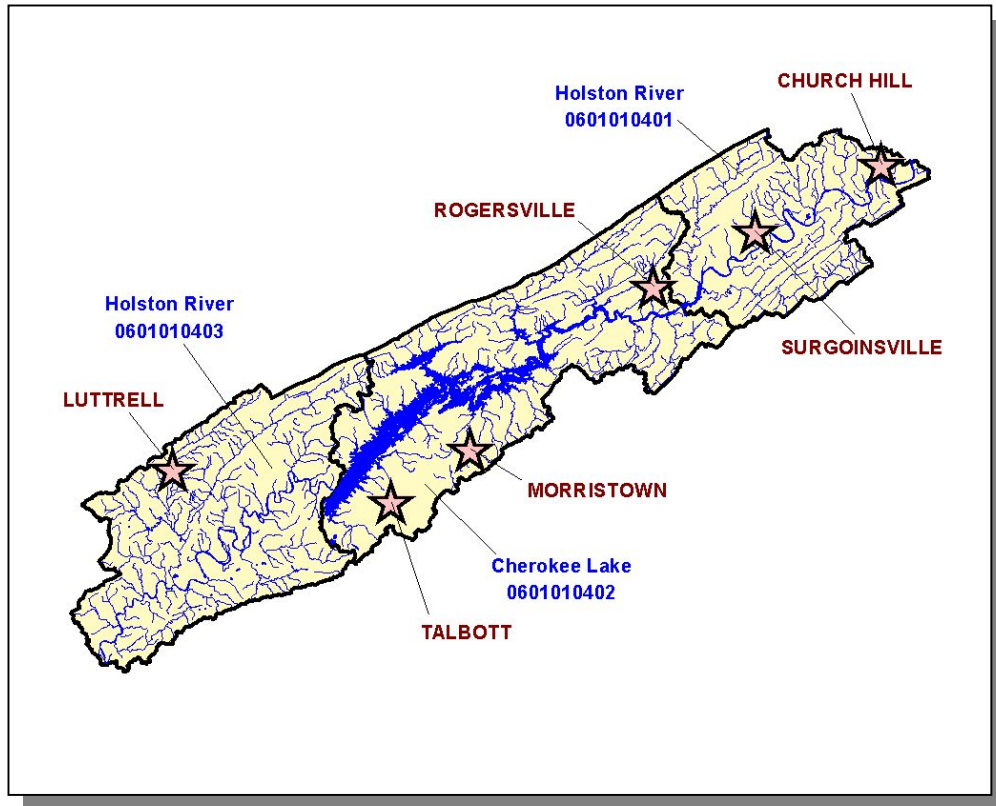


Figure 4-1. The Tennessee Portion of the Holston River Watershed is Composed of Three USGS-Delineated Subwatersheds (10-Digit Subwatersheds). Locations of Church Hill, Luttrell, Morristown, Rogersville, Surgoinsville, and Talbott are shown for reference.

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4.2. CHARACTERIZATION OF HUC-10 SUBWATERSHEDS. The Watershed Characterization System (WCS) software and data sets provided by EPA Region IV were used to characterize each subwatershed in the Tennessee portion of the Holston River Watershed.

HUC-10	HUC-12
0601010401	060101040101 (Holston River)
	060101040102 (Holston River)
	060101040103 (Big Creek)
	060101040104 (Beech Creek)
0601010402	060101040201 (Cherokee Lake)
	060101040202 (Robertson Creek)
	060101040203 (Cherokee Lake)
	060101040204 (Caney Creek)
	060101040205 (Poor Valley Creek)
	060101040206 (Cherokee Lake)
	060101040207 (Turkey Creek)
	060101040208 (German Creek)
	060101040209 (Cherokee Lake)
	060101040210 (Cherokee Lake)
0601010403	060101040301 (Holston River)
	060101040302 (Holston River)
	060101040303 (Richland Creek)
	060101040304 (Holston River)
	060101040305 (Flat Creek)
	060101040306 (Roseberry Creek)

Table 4-1. HUC-12 Drainage Areas are Nested Within HUC-10 Drainages. NRCS worked with USGS to delineate the HUC-10 and HUC-12 drainage boundaries.

4.2.A. 0601010401.

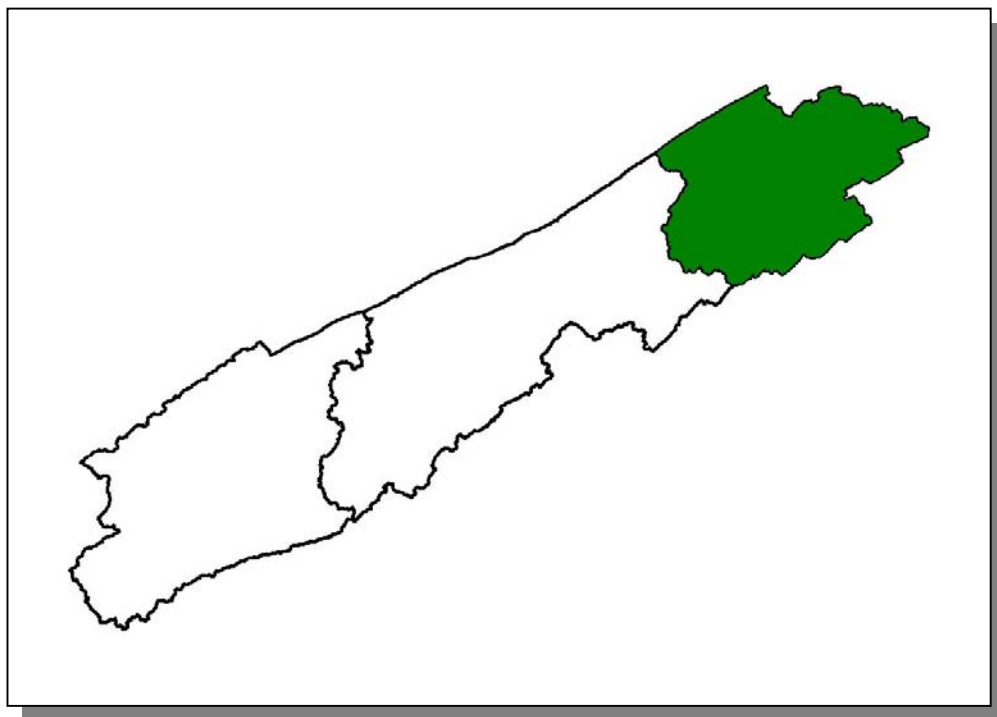


Figure 4-2. Location of Subwatershed 0601010401. All Holston River HUC-10 subwatershed boundaries are shown for reference.

4.2.A.i. 060101040101 (Holston River).

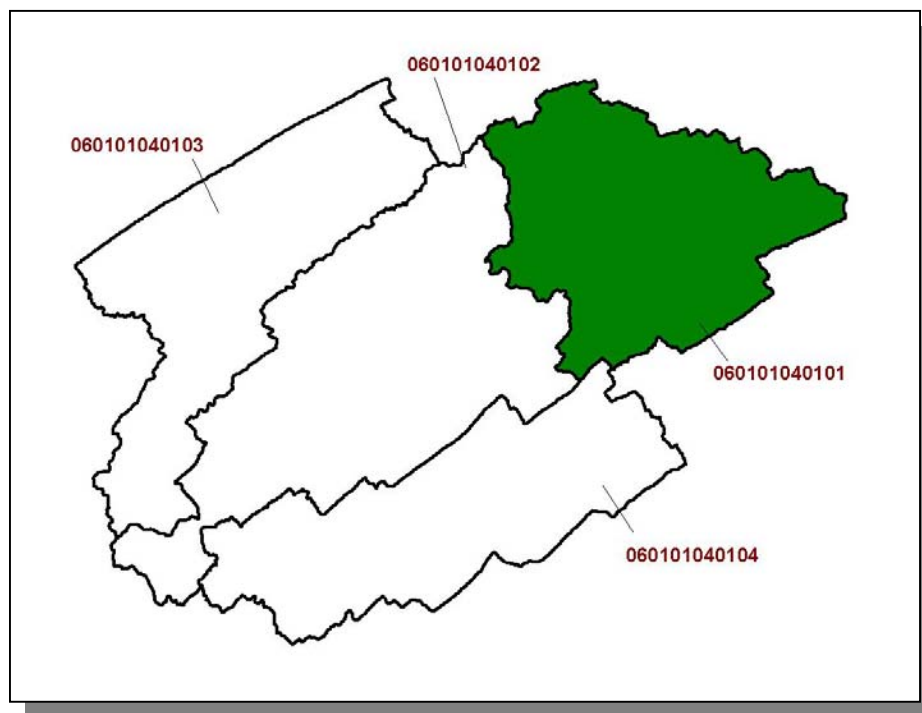


Figure 4-3. Location of Subwatershed 060101040101. All HUC-12 subwatershed boundaries are shown for reference.

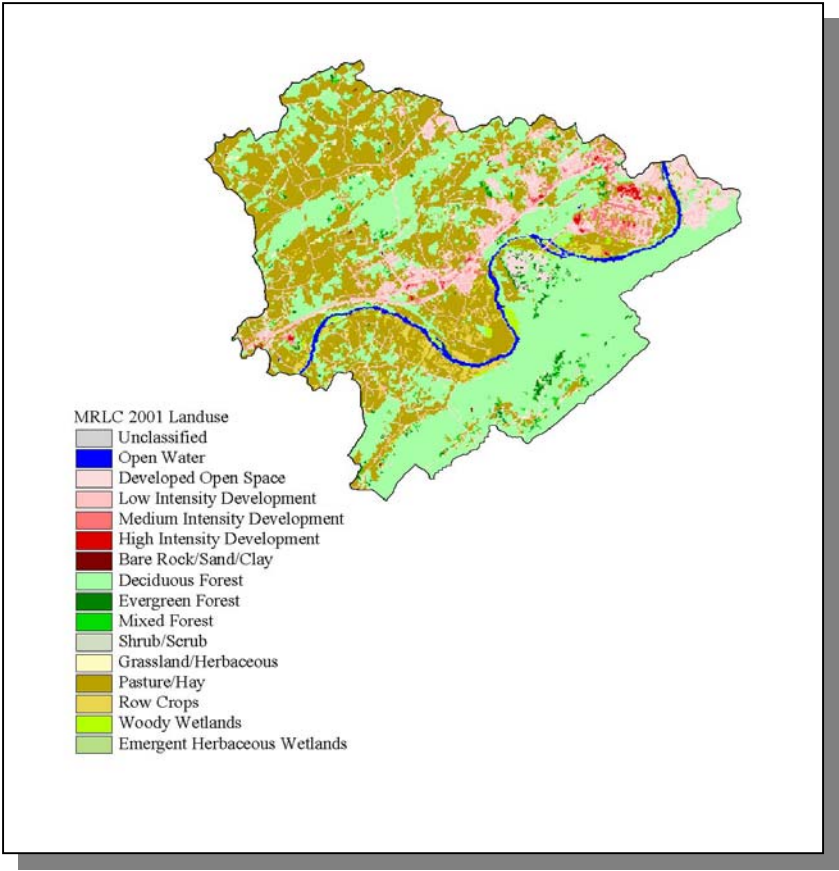


Figure 4-4. Illustration of Land Use Distribution in Subwatershed 060101040101.

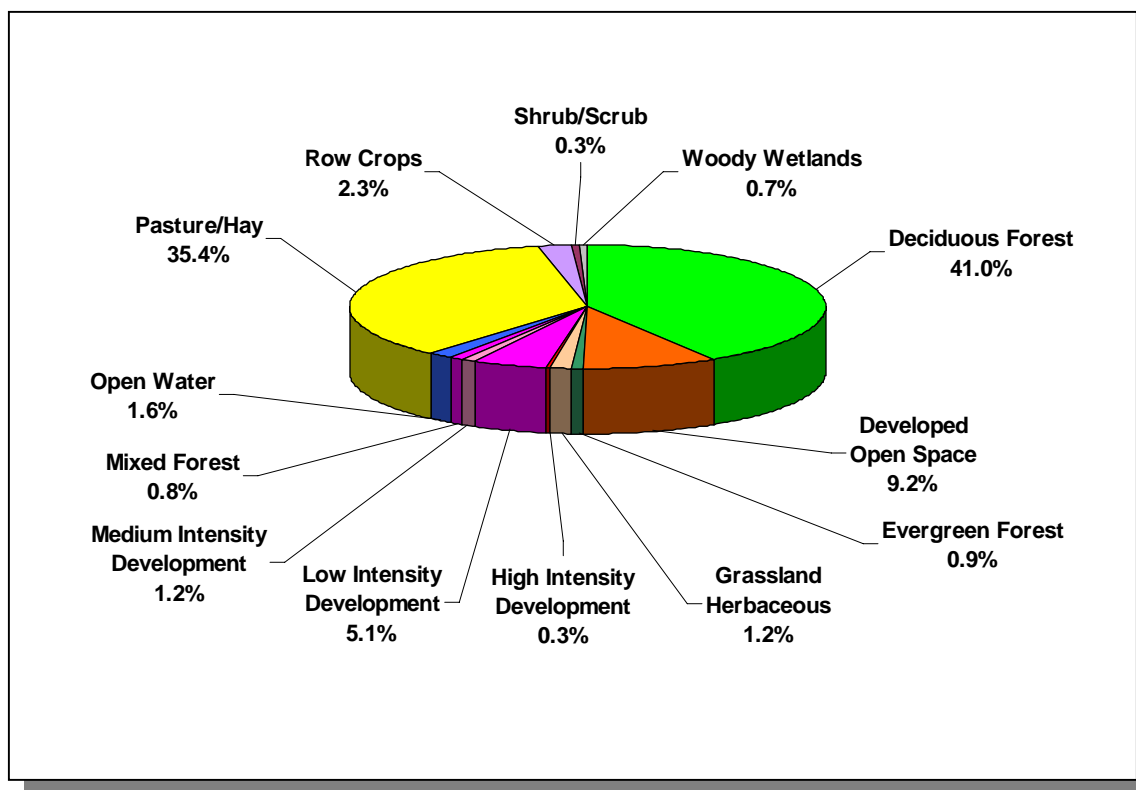


Figure 4-5. Land Use Distribution in Subwatershed 060101040101. More information is provided in Appendix IV.

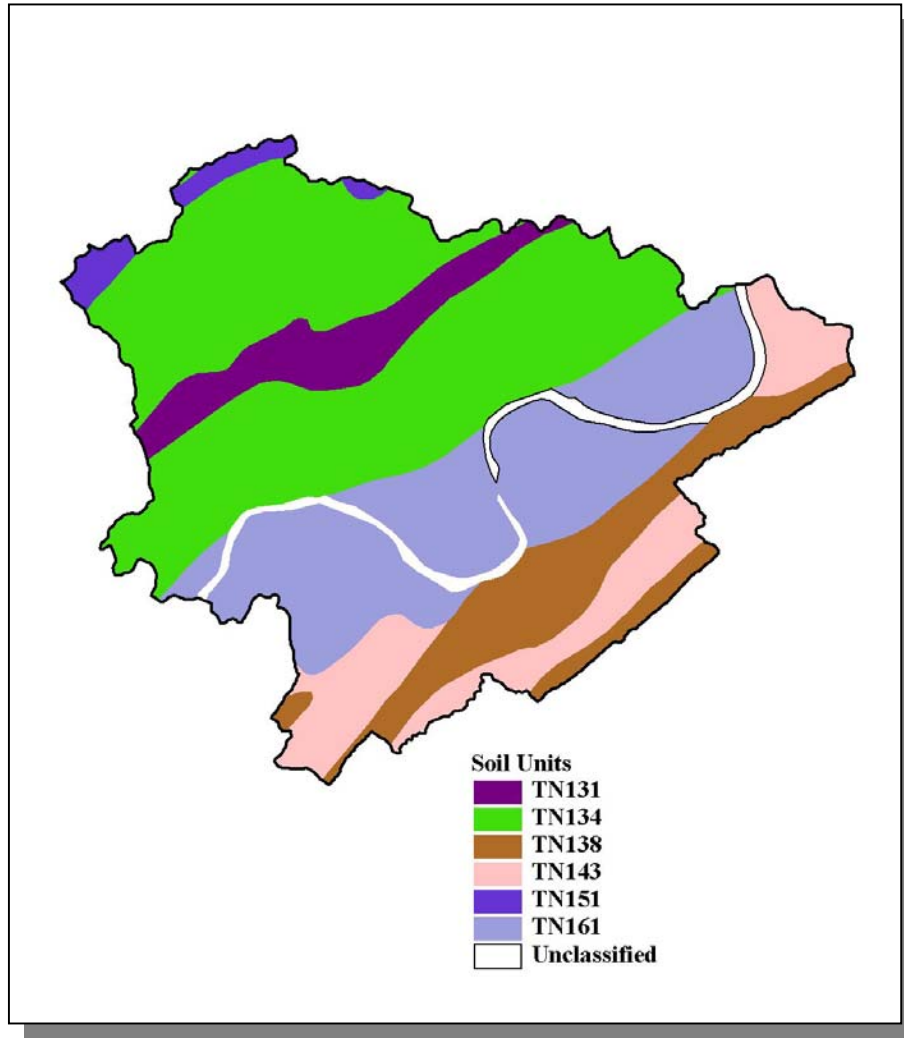


Figure 4-6. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040101.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN131	0.00	C	1.17	4.95	Silty Loam	0.33
TN134	0.00	B	1.38	5.18	Loam	0.31
TN138	0.00	C	2.48	4.26	Sandy Loam	0.22
TN143	0.00	C	1.22	6.44	Loam	0.32
TN151	0.00	C	2.88	4.75	Loam	0.40
TN161	7.00	C	1.41	5.11	Loam	0.31

Table 4-2. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040101. The definition of "Hydrologic Group" is provided in Appendix IV.

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County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-2000)
	1990	1997	2000		1990	1997	2000	
Hawkins	44,565	48,821	53,563	10.54	4,696	5,145	5,645	20.2
Sullivan	143,596	150,371	153,048	0.64	923	966	984	6.6
Total	188,161	199,192	206,611		5,619	6,111	6,629	18.0

Table 4-3. Population Estimates in Subwatershed 060101040101.

Populated Place	County	Population	NUMBER OF HOUSING UNITS			
			Total	Public Sewer	Septic Tank	Other
Church Hill	Hawkins	4,834	2,004	1,558	429	17
Kingsport	Hawkins	36,408	16,738	14,810	1,903	25
Mount Carmel	Hawkins	4,039	1,634	1,077	557	0
Total		45,281	20,736	17,445	2,889	42

Table 4-4. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 060101040101.

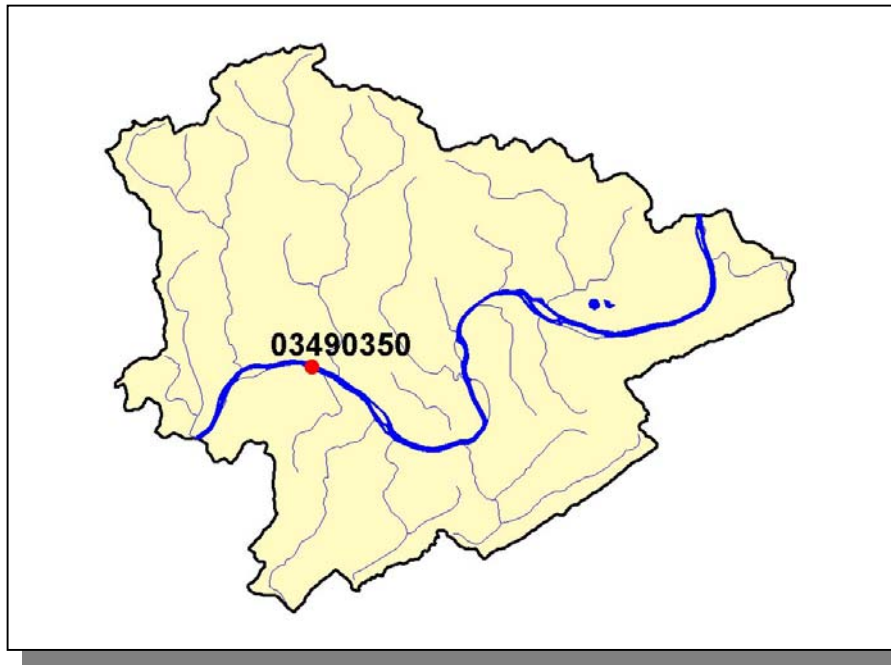


Figure 4-7. Location of Historical Streamflow Data Collection Sites in Subwatershed 060101040101. More information is provided in Appendix IV.

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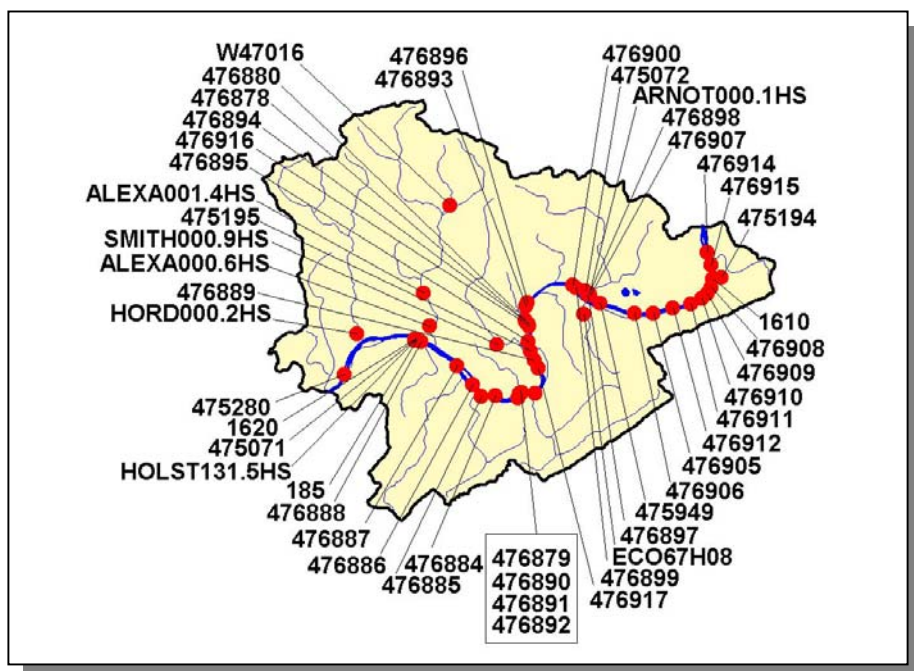


Figure 4-8. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 060101040101. More information, including site names and locations, is provided in Appendix IV.

4.2.A.i.a. Point Source Contributions.

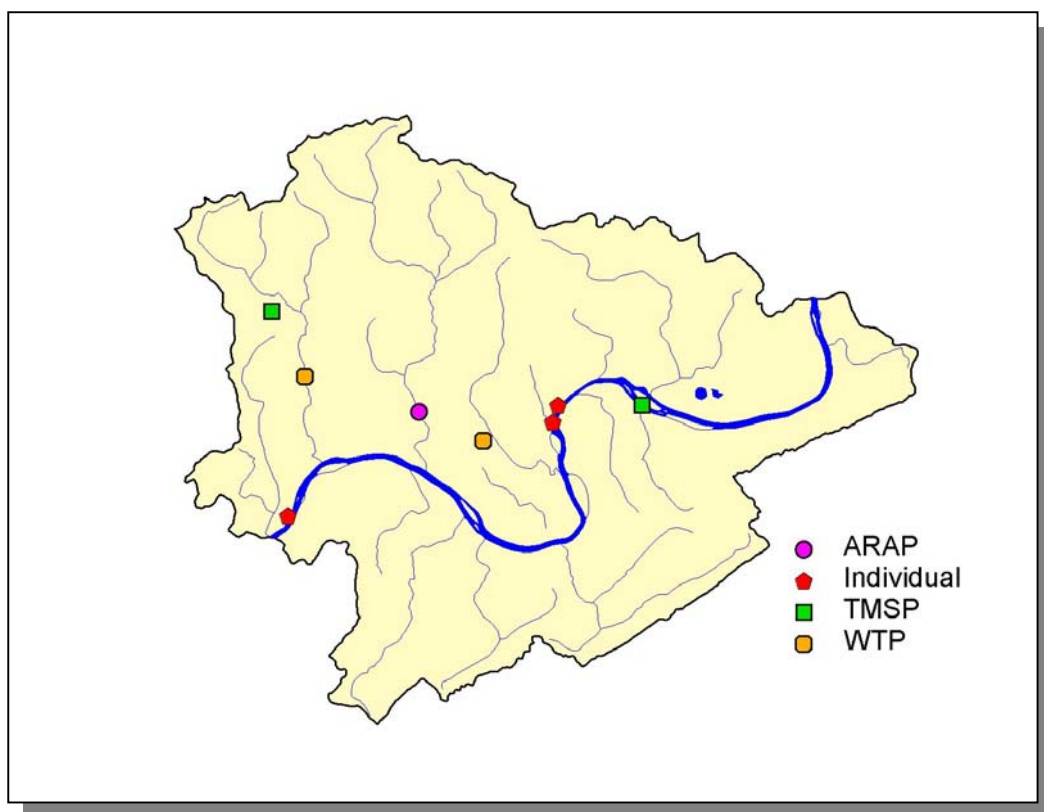


Figure 4-9. Location of Permits Issued in Subwatershed 060101040101. More information, including the names of facilities, is provided in Appendix IV.

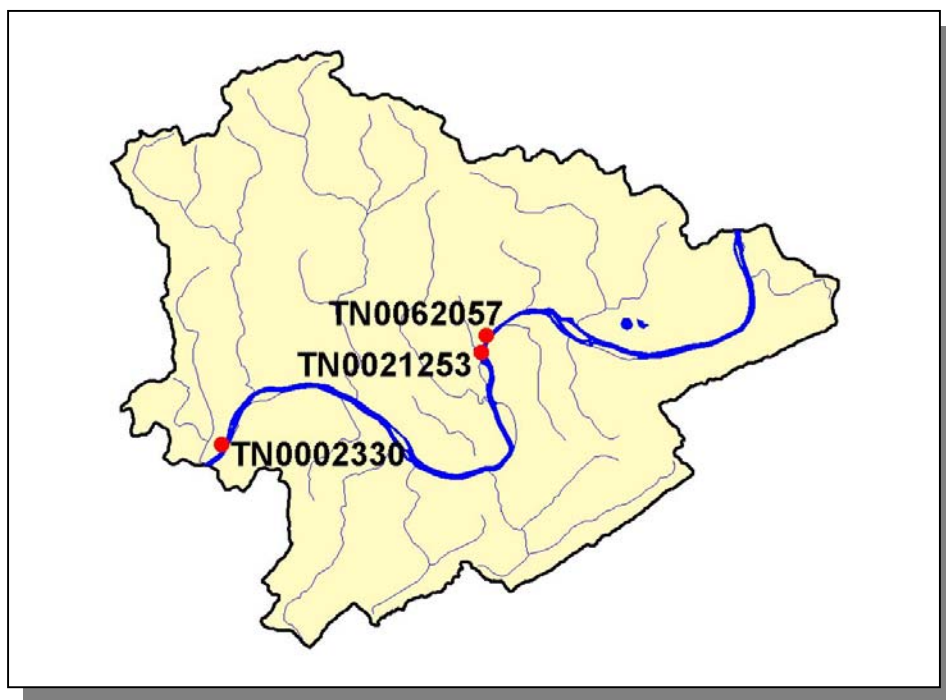


Figure 4-10. Location of Active NPDES Sites in Subwatershed 060101040101. More information, including the names of facilities, is provided in Appendix IV.

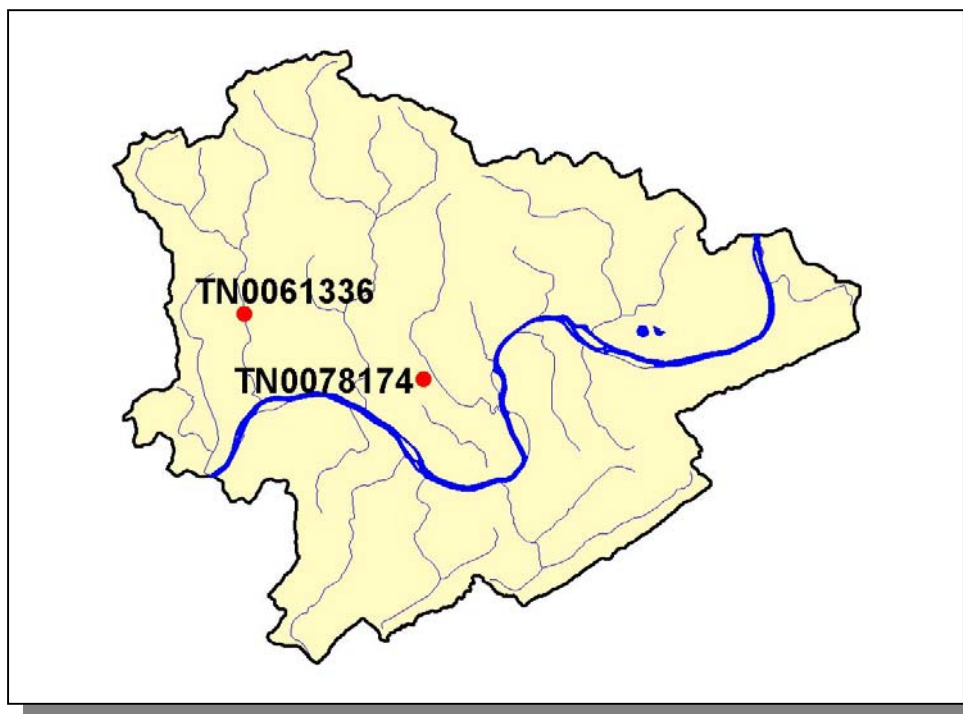


Figure 4-11. Location of Water Treatment Plants in Subwatershed 060101040101. More information, including the names of facilities, is provided in Appendix IV.

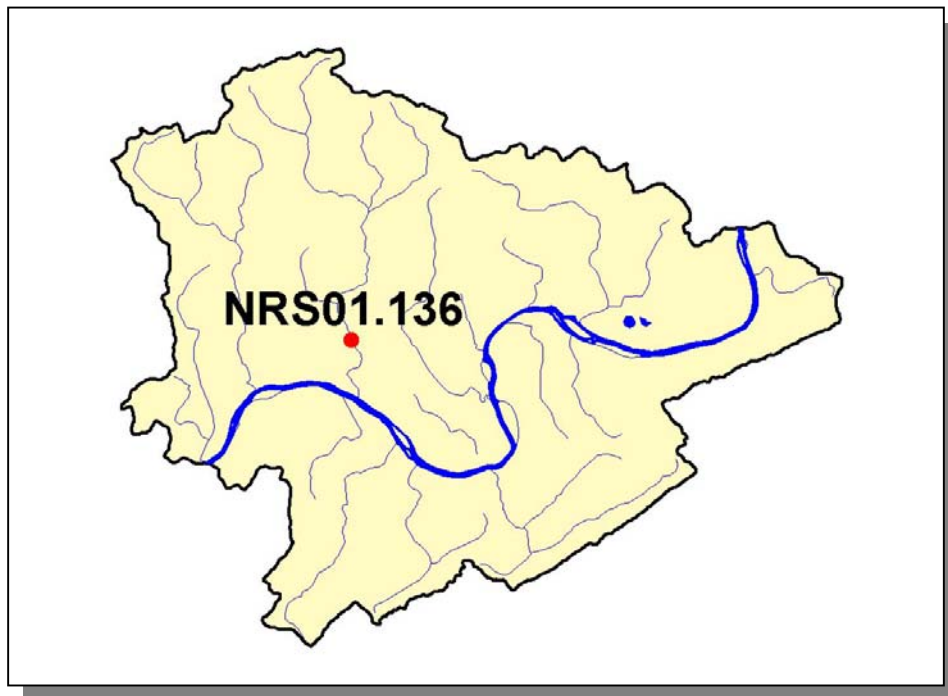


Figure 4-12. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 060101040101. More information is provided in Appendix IV.

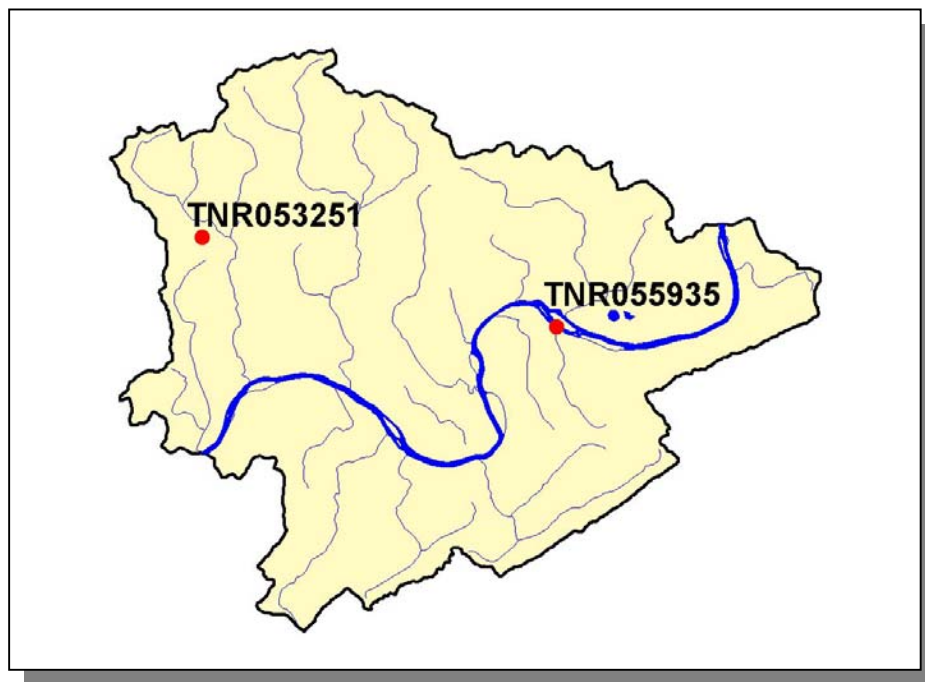


Figure 4-13. Location of TMSF Sites in Subwatershed 060101040101. More information, including the names of facilities, is provided in Appendix IV.

There is one NPDES facility discharging to water bodies listed on the 2004 303(d) list in Subwatershed 060101040101:

- TN0078174 (1st Utility District Hawkins County WTP) discharges to Alexander Creek @ RM 0.2

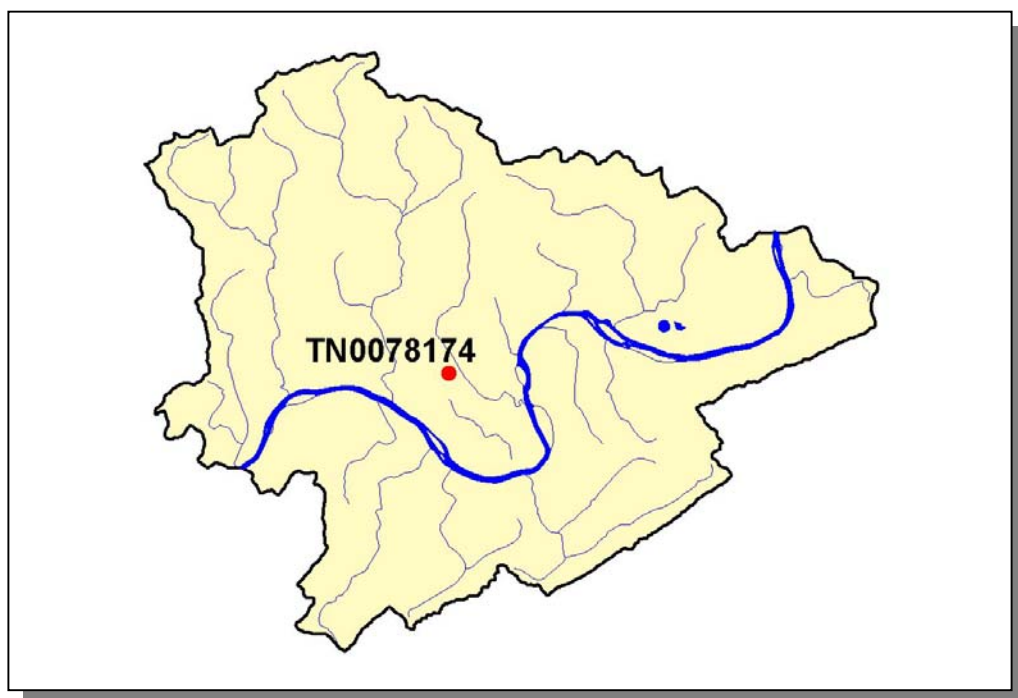


Figure 4-14. Location of NPDES Dischargers to Water Bodies Listed on the 2004 303(d) List in Subwatershed 060101040101. More information, including the names of facilities, is provided in Appendix IV.

PERMIT #	1Q10	3Q10	7Q10	3Q20	QDESIGN
TN00078174					

Table 4-5. Receiving Stream Flow Information for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 060101040101. Data are in million gallons per day (MGD). Data were obtained from the USGS publication Flow Duration and Low Flows of Tennessee Streams Through 1992 or from permit files.

PERMIT #	HARDNESS
TN0078174	X

Table 4-6. Monitoring Requirements for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 060101040101.

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PERMIT #	NO ₃	TRC	TSS	SETTLEABLE SOLIDS	AI
TN0078174	X	X	X	X	X

Table 4-7. Parameters Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 0601010401. WET, Whole Effluent Toxicity; CBOD₅, Carbonaceous Biochemical Oxygen Demand (5-Day); TRC, Total Residual Chlorine; TSS, Total Suspended Solids.

4.2.A.i.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
2,125	4,142	105	7	49	27

Table 4-8. Summary of Livestock Count Estimates in Subwatershed 060101040101. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Hawkins	18,796	36,429	903	1,079	442	243
Sullivan	13,322	29,386	1,075	594	104	69

Table 4-9. Summary of Livestock Count Estimates in Sullivan and Hawkins Counties. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.

County	INVENTORY		REMOVAL RATE	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Hawkins	177.4	177.4	0.4	2.1
Sullivan	123.7	123.7	0.1	0.3

Table 4-10. Forest Acreage and Annual Removal Rates (1987-1994) in Hawkins and Sullivan Counties.

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CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.32
Grass (Hayland)	0.55
Legumes, Grass (Hayland)	0.39
Legumes (Hayland)	0.16
Grass, Forbs, Legumes (Mixed Pasture)	0.59
Corn (Row Crops)	8.20
Tobacco (Row Crops)	15.76
Other Vegetable and Truck Crops	33.50
Other Land in Farms	0.02
Farmsteads and Ranch Headquarters	0.40

Table 4-11. Annual Estimated Total Soil Loss in Subwatershed 060101040101.

4.2.A.ii. 060101040102 (Holston River).

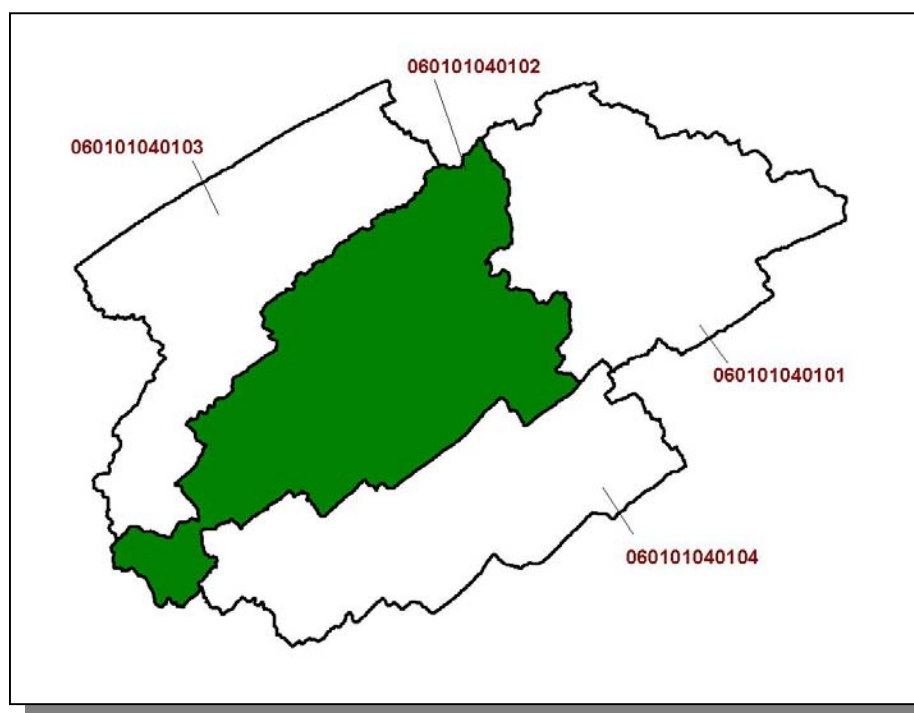


Figure 4-15. Location of Subwatershed 060101040102. All HUC-12 subwatershed boundaries are shown for reference.

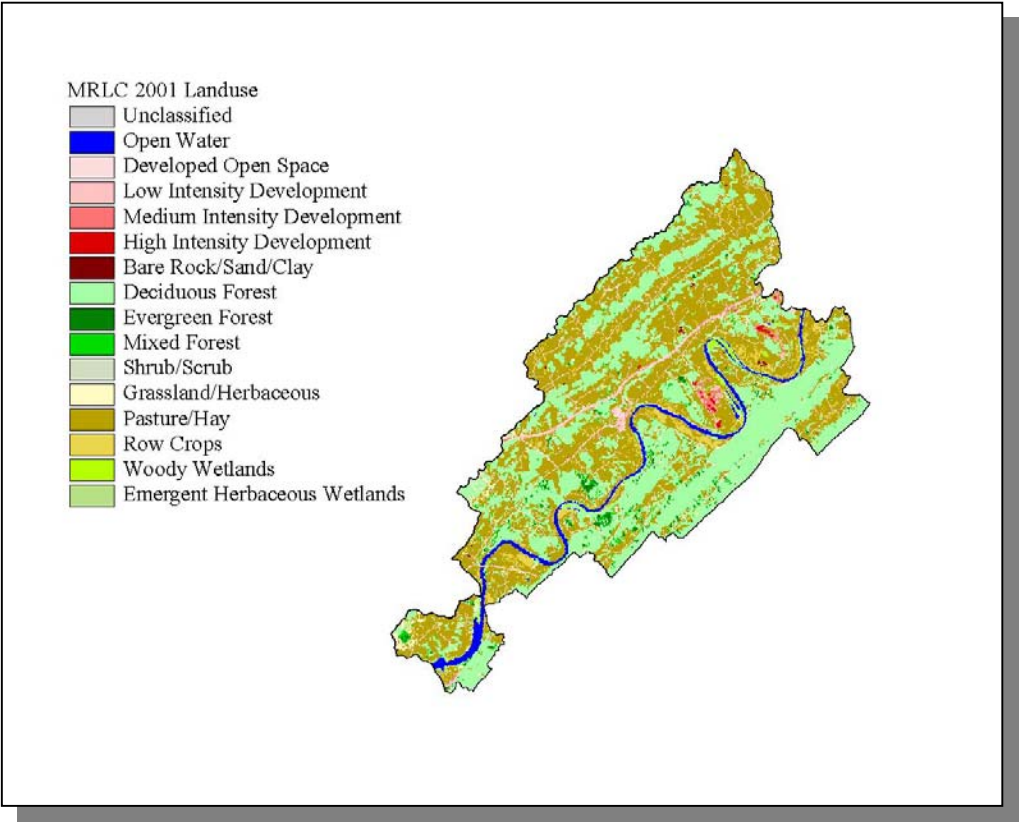


Figure 4-16. Illustration of Land Use Distribution in Subwatershed 060101040102.

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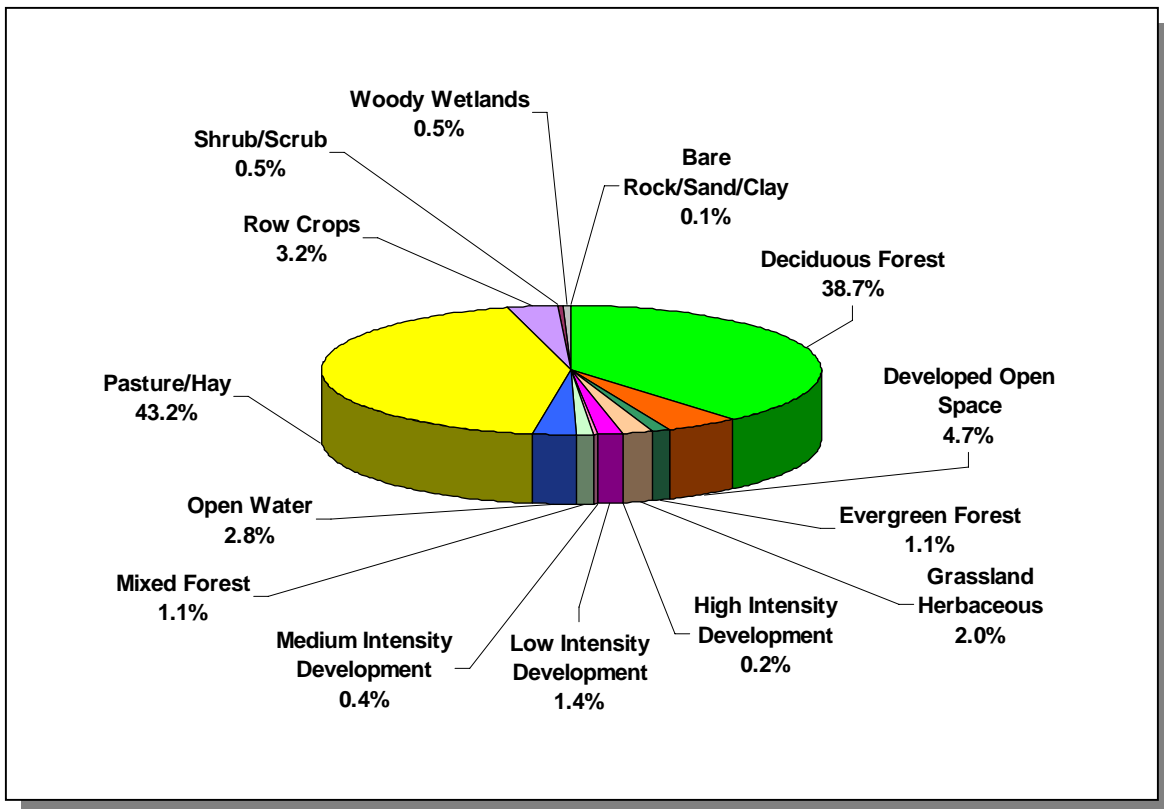


Figure 4-17. Land Use Distribution in Subwatershed 060101040102. More information is provided in Appendix IV.

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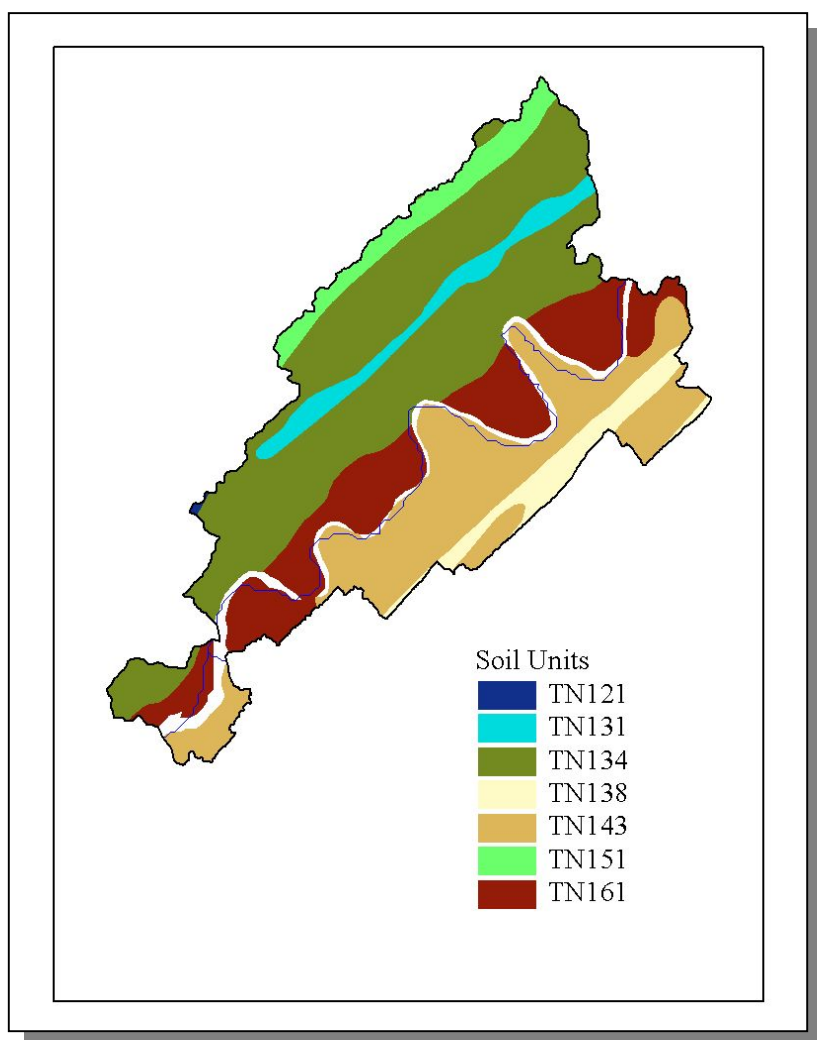


Figure 4-18. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040102.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN121	0.00	B	1.30	5.21	Loam	0.33
TN131	0.00	C	1.17	4.95	Silty Loam	0.33
TN134	0.00	B	1.38	5.18	Loam	0.31
TN138	0.00	C	2.48	4.26	Sandy Loam	0.22
TN143	0.00	C	1.22	6.44	Loam	0.32
TN151	0.00	C	2.88	4.75	Loam	0.40
TN161	7.00	C	1.41	5.11	Loam	0.31

Table 4-12. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040102. The definition of "Hydrologic Group" is provided in Appendix IV.

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County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-2000)
	1990	1997	2000		1990	1997	2000	
Hawkins	44,565	48,821	53,563	15.12	6,737	7,380	8,097	20.2

Table 4-13. Population Estimates in Subwatershed 060101040102.

Populated Place	County	Population	NUMBER OF HOUSING UNITS			
			Total	Public Sewer	Septic Tank	Other
Church Hill	Hawkins	4,834	2,004	1,558	429	17
Surgoinsville	Hawkins	1,499	625	38	553	34
Total		6,333	2,629	1,596	982	51

Table 4-14. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 060101040102.



Figure 4-19. Location of Historical Streamflow Data Collection Sites in Subwatershed 060101040102. More information is provided in Appendix IV.

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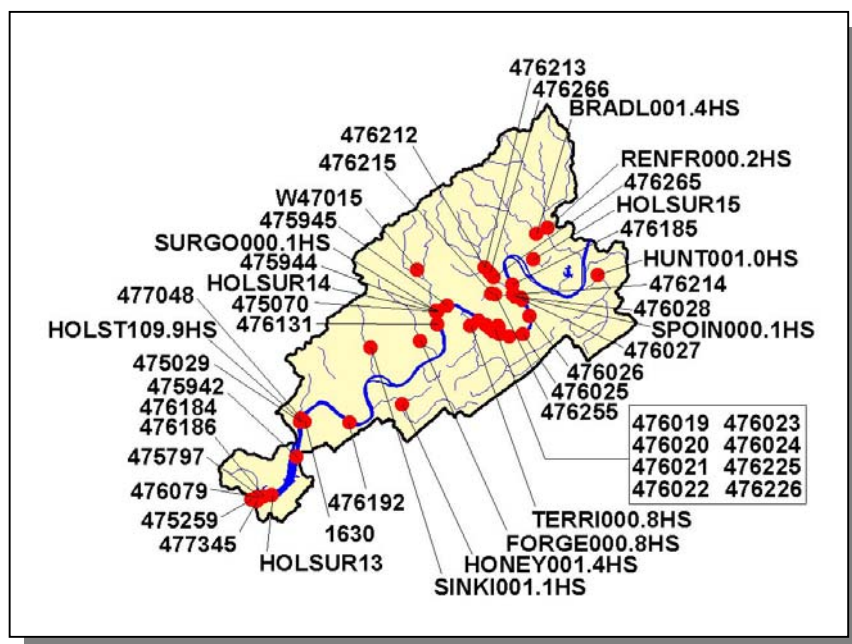


Figure 4-20. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 060101040102. More information, including site names and locations, is provided in Appendix IV.

4.2.A.ii.a. Point Source Contributions.

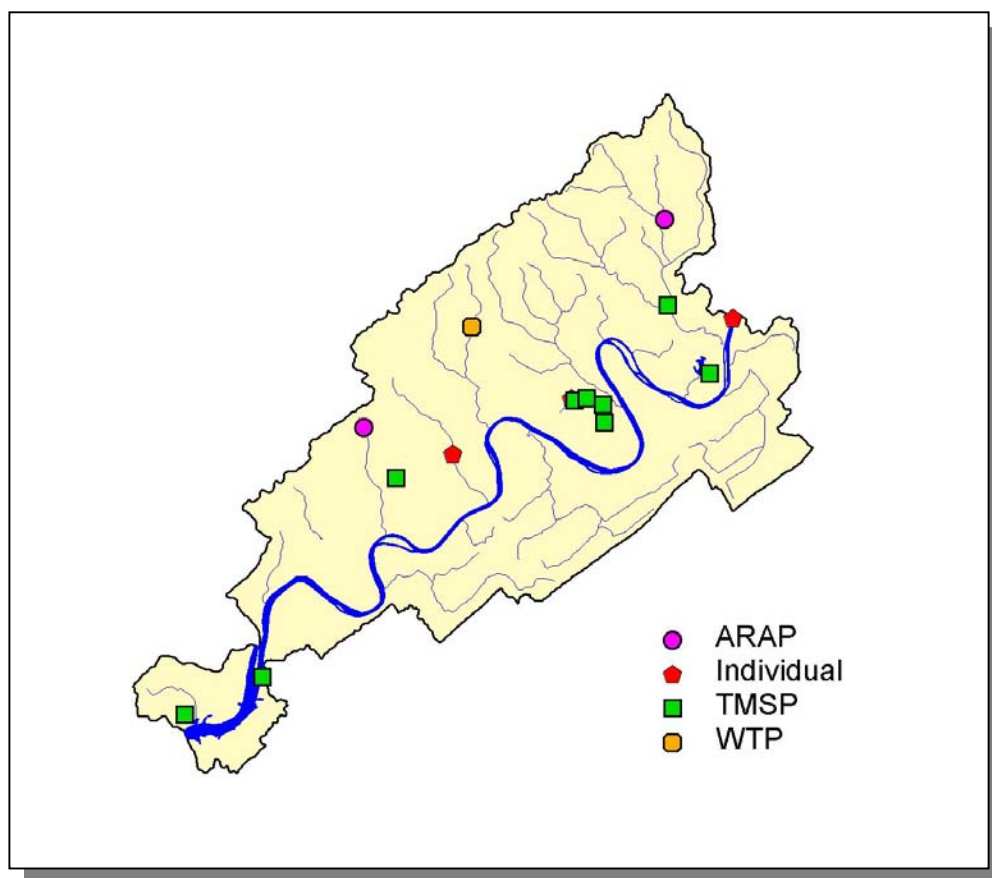


Figure 4-21. Location of Permits Issued in Subwatershed 060101040102. More information, including the names of facilities, is provided in Appendix IV.

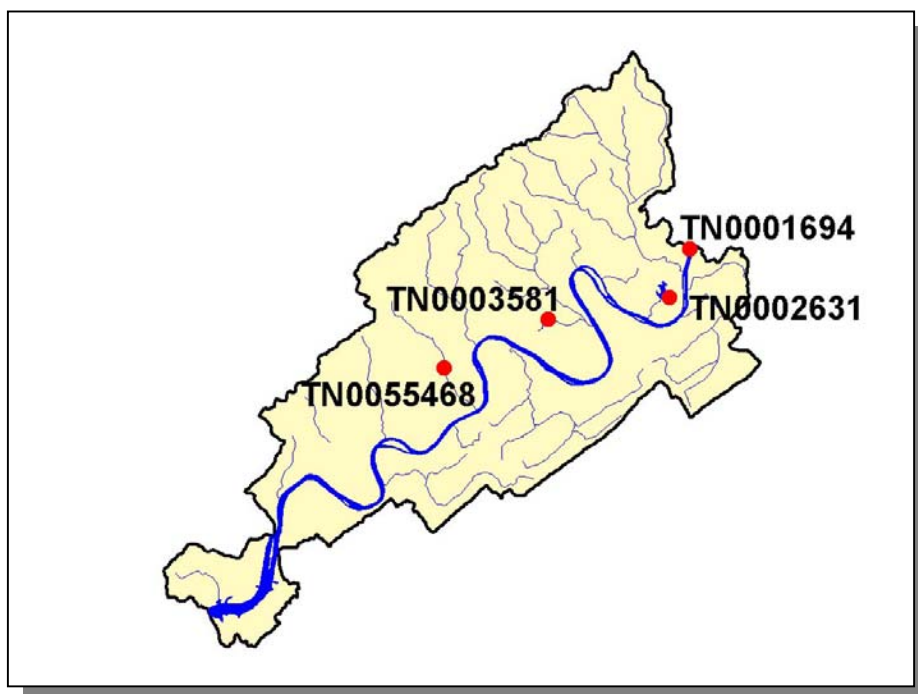


Figure 4-22. Location of Active NPDES Sites in Subwatershed 060101040102. More information, including the names of facilities, is provided in Appendix IV.



Figure 4-23. Location of Water Treatment Plants in Subwatershed 060101040102. More information, including the names of facilities, is provided in Appendix IV.

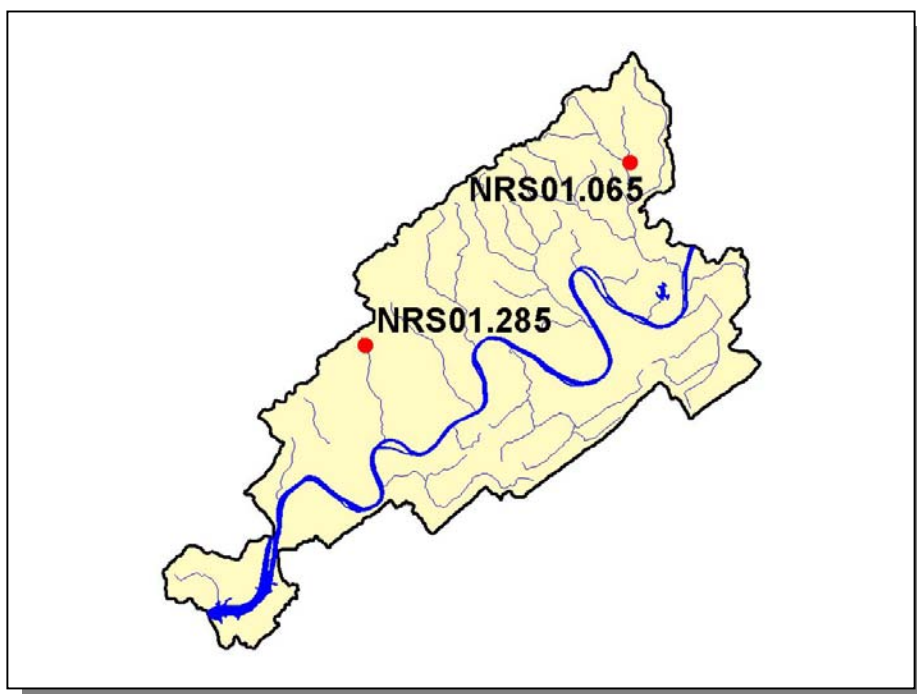


Figure 4-24. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 060101040102. More information is provided in Appendix IV.

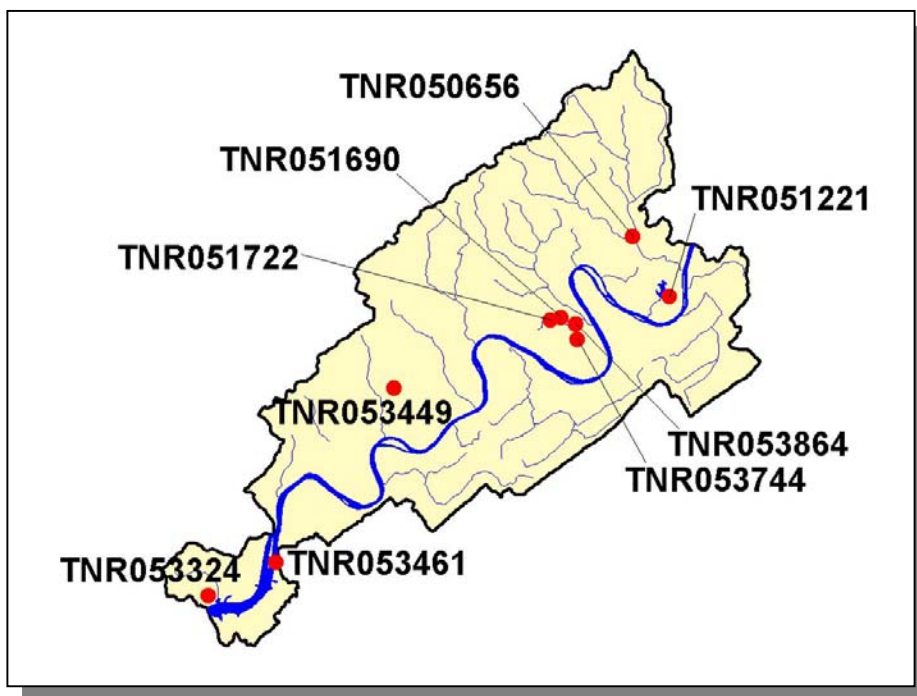


Figure 4-25. Location of TMSP Sites in Subwatershed 060101040102. More information, including the names of facilities, is provided in Appendix IV.

4.2.A.ii.a.i. Dischargers to Water Bodies Listed on the 2004 303(d) List

There are five NPDES facilities discharging to water bodies listed on the 2004 303(d) list in Subwatershed 060101040102:

- TN0001694 (Quebecor World) discharges to an unnamed tributary to Bradley Creek @ RM 1.4
- TN0003581 (Alladin Investments, Inc. (discharges to an unnamed tributary @ RM 0.08 to Stoney Point Creek @ RM 0.2
- TN0055468 (Surgoinville Middle and Elementary Schools) discharges to Forgey Creek @ RM 1.4
- TN0073261 (Surgoinville Utility District WTP) discharges to Young Branch, Surgoinville Creek, and the Holston River @ RM 118.5
- TN0078174 (1st Utility District Hawkins County WTP) discharges to Alexander Creek @ RM 0.2

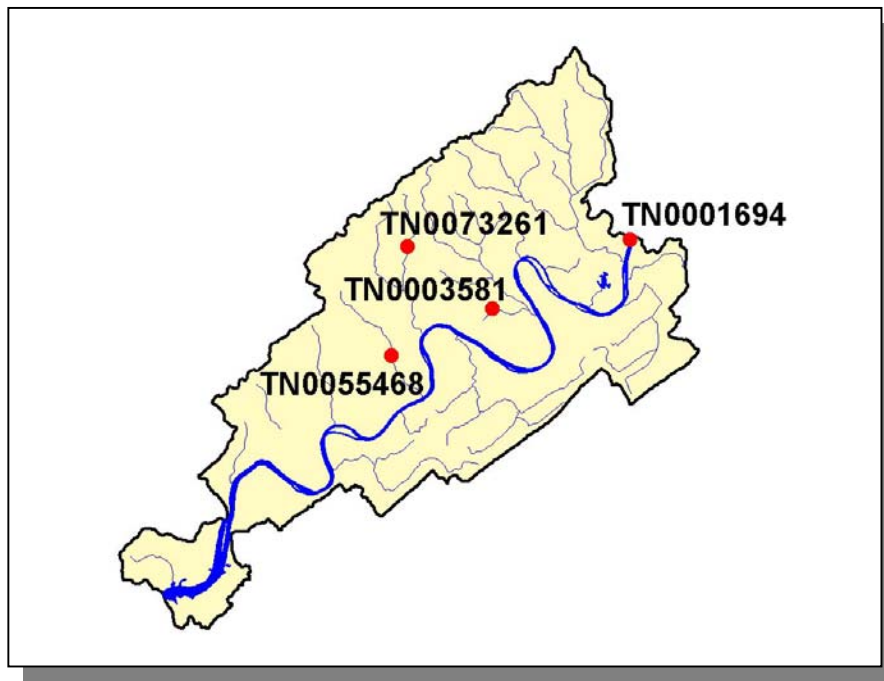


Figure 4-26. Location of NPDES Dischargers to Water Bodies Listed on the 2004 303(d) List in Subwatershed 060101040102. More information, including the names of facilities, is provided in Appendix IV.

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PERMIT #	1Q10	3Q10	7Q10	3Q20	QDESIGN
TN0001694					
TN0003581					
TN0055468			0		

Table 4-15. Receiving Stream Flow Information for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 060101040102. Data are in million gallons per day (MGD). Data were obtained from the USGS publication *Flow Duration and Low Flows of Tennessee Streams Through 1992* or from permit files.

PERMIT #	FLOW	TEMP	HARDNESS	COLOR	FOAM	FLOATING MATERIAL	OIL SHEEN
TN0001694	X	X					
TN0003581	X	X		X	X	X	X
TN0055468	X						
TN0073261	X						
TN0078174			X				

Table 4-16. Monitoring Requirements for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 060101040102.

PERMIT #	ETHYLBENZENE	BENZENE	METHYLETHYLKETONE	ACETONE	TOLUENE
TN0001694	X	X	X	X	X

Table 4-17. Monitoring Requirements for Organic Parameters for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 060101040102.

PERMIT #	WET	CBOD ₅	NH ₃	NO ₃	TRC	TSS	SETTLEABLE SOLIDS	DO	pH	OIL and GREASE	AI
TN0001694	X	X			X	X	X				
TN0003581	X	X	X		X	X	X	X	X	X	
TN0055468		X			X	X	X	X	X		
TN0073261					X	X	X		X		X
TN0078174				X	X	X	X				X

Table 4-18. Parameters Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 060101040102. WET, Whole Effluent Toxicity; CBOD₅, Carbonaceous Biochemical Oxygen Demand (5-Day); TRC, Total Residual Chlorine; TSS, Total Suspended Solids.

PERMIT #	E. coli	FECAL COLIFORM
TN0003581		X
TN0055468	X	X

Table 4-19. Bacteria Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 060101040102.

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4.2.A.ii.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
3,959	7,673	190	13	93	51

Table 4-20. Summary of Livestock Count Estimates in Subwatershed 060101040102. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Hawkins	18,796	36,429	903	1,079	442	243

Table 4-21. Summary of Livestock Count Estimates in Hawkins County. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.

County	INVENTORY		REMOVAL RATE	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Hawkins	177.4	177.4	0.4	2.1

Table 4-22. Forest Acreage and Annual Removal Rates (1987-1994) in Hawkins County

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.26
Grass (Hayland)	0.56
Legumes, Grass (Hayland)	0.40
Legumes (Hayland)	0.16
Grass, Forbs, Legumes (Mixed Pasture)	0.54
Tobacco (Row Crops)	16.40
Other Vegetable and Truck Crops	33.50
Farmsteads and Ranch Headquarters	0.40

Table 4-23. Annual Estimated Total Soil Loss in Subwatershed 060101040102.

4.2.A.iii. 060101040103 (Big Creek).

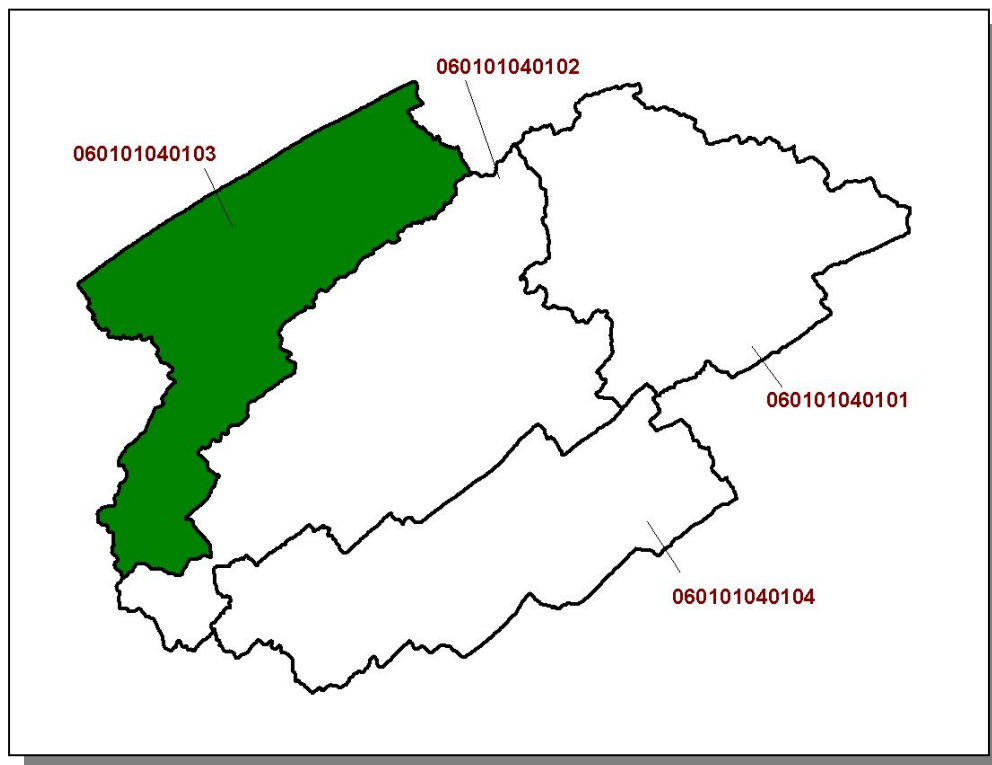


Figure 4-27. Location of Subwatershed 060101040103. All HUC-12 subwatershed boundaries are shown for reference.

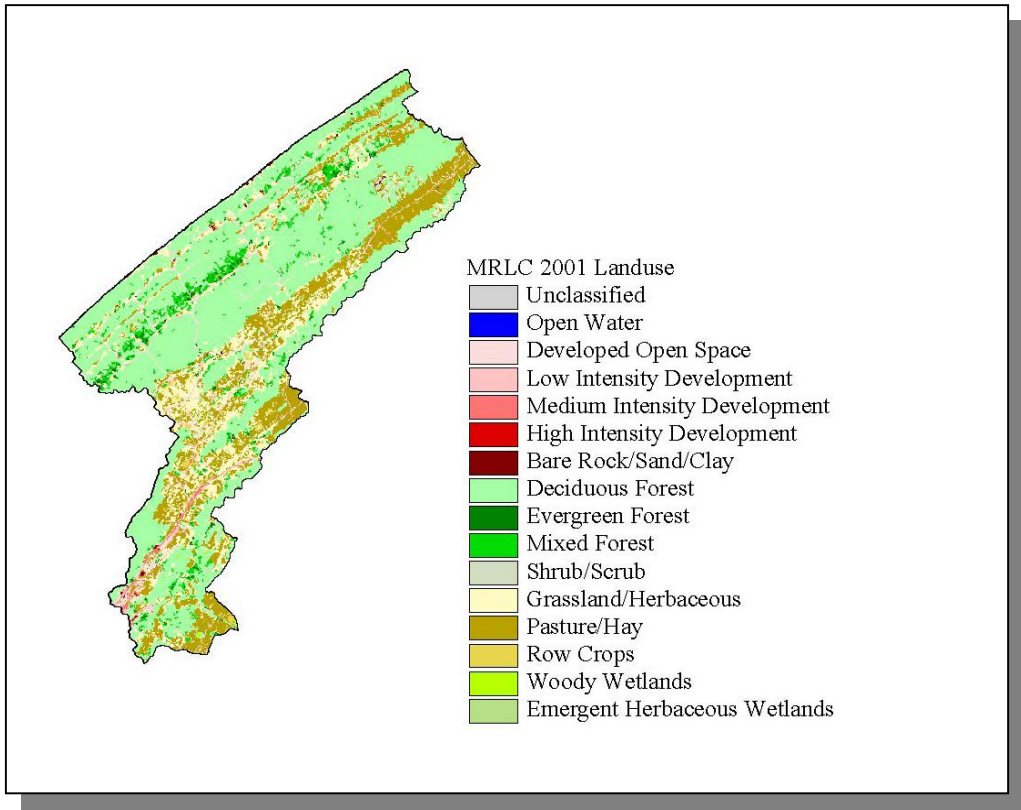


Figure 4-28. Illustration of Land Use Distribution in Subwatershed 060101040103.

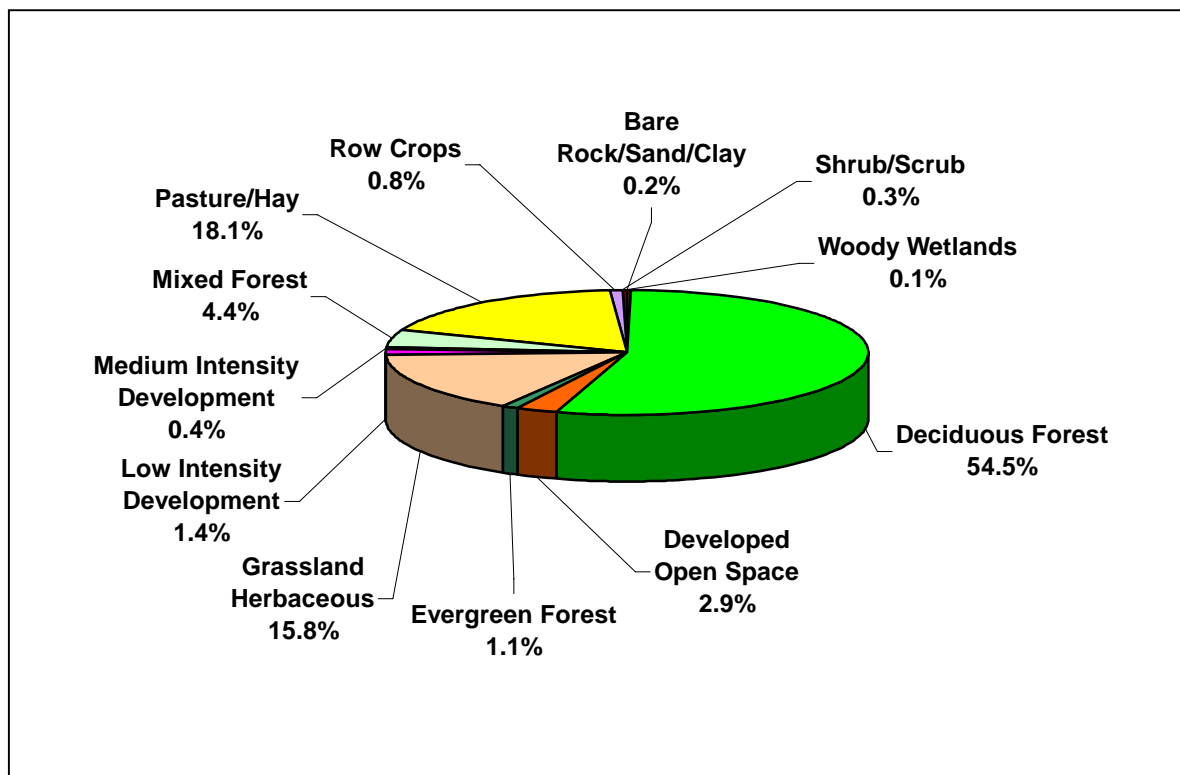


Figure 4-29. Land Use Distribution in Subwatershed 060101040103. More information is provided in Appendix IV.

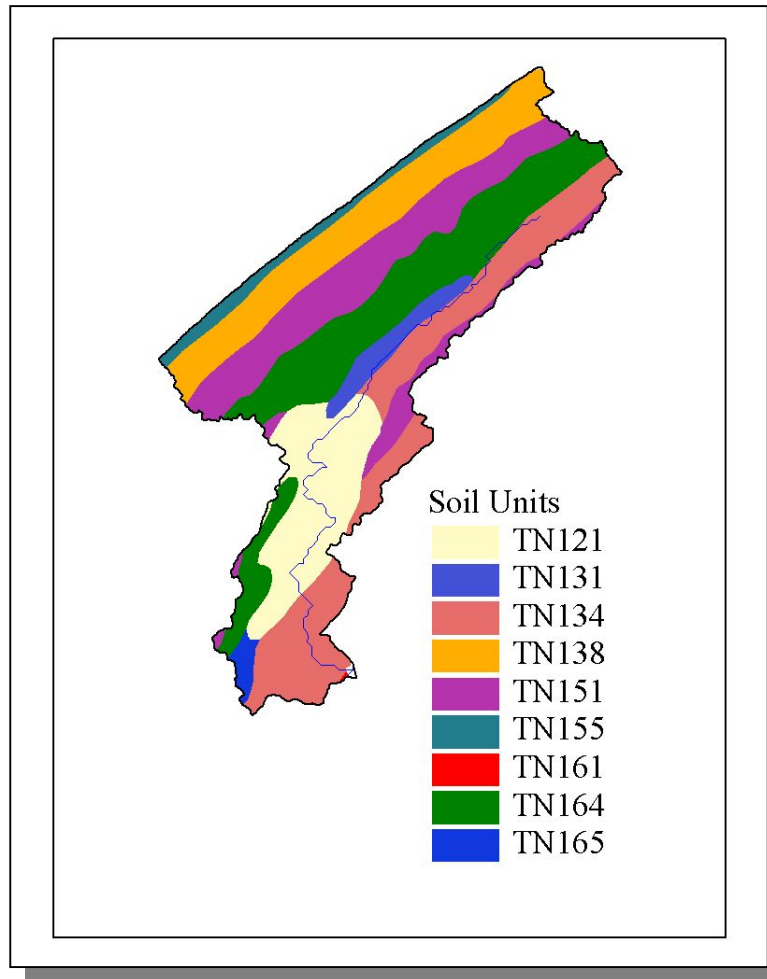


Figure 4-30. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040103.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN121	0.00	B	1.30	5.21	Loam	0.33
TN131	0.00	C	1.17	4.95	Silty Loam	0.33
TN134	0.00	B	1.38	5.18	Loam	0.31
TN138	0.00	C	2.48	4.26	Sandy Loam	0.22
TN151	0.00	C	2.88	4.75	Loam	0.40
TN155	0.00	C	1.71	5.31	Loam	0.32
TN161	7.00	C	1.41	5.11	Loam	0.31
TN164	0.00	C	4.48	5.15	Loam	0.25
TN165	0.00	B	4.79	5.51	Silty Loam	0.32

Table 4-24. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040103. The definition of "Hydrologic Group" is provided in Appendix IV.

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County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-2000)
	1990	1997	2000		1990	1997	2000	
Hancock	6,739	6,801	6,786	0.11	7	7	7	0.0
Hawkins	44,565	48,821	53,563	10.92	4,867	5,332	5,849	20.2
Total	51,304	55,622	60,349		4,874	5,339	5,856	20.1

Table 4-25. Population Estimates in Subwatershed 060101040103.

Populated Place	County	Population	NUMBER OF HOUSING UNITS			
			Total	Public Sewer	Septic Tank	Other
Rogersville	Hawkins	4,149	1,995	1,833	133	29

Table 4-26. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 060101040103.

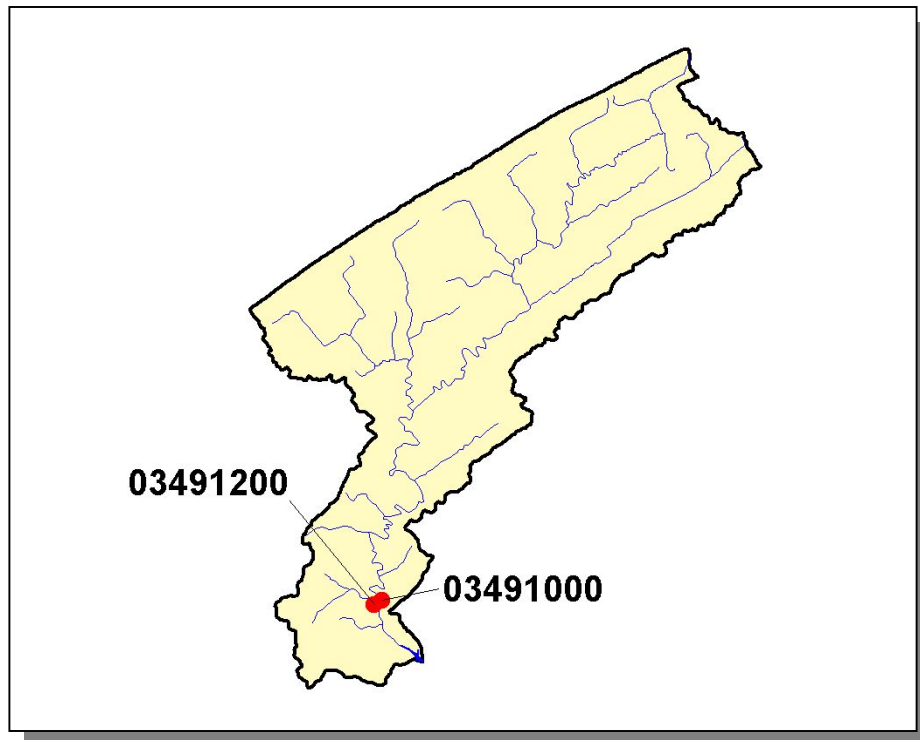


Figure 4-31. Location of Historical Streamflow Data Collection Sites in Subwatershed 060101040103. More information is provided in Appendix IV.

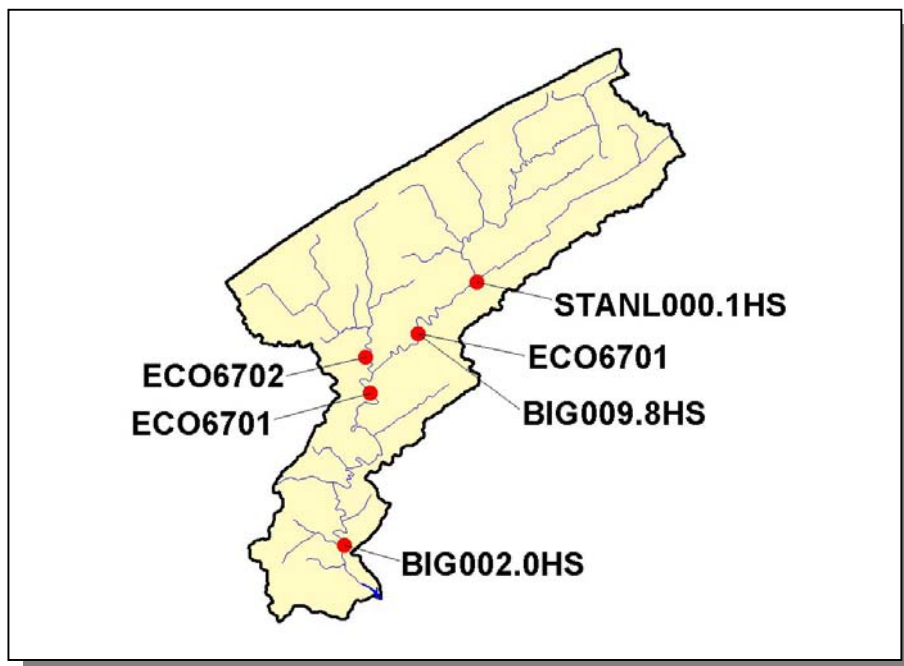


Figure 4-32. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 060101040103. More information, including site names and locations, is provided in Appendix IV.

4.2.A.iii.a. Point Source Contributions.

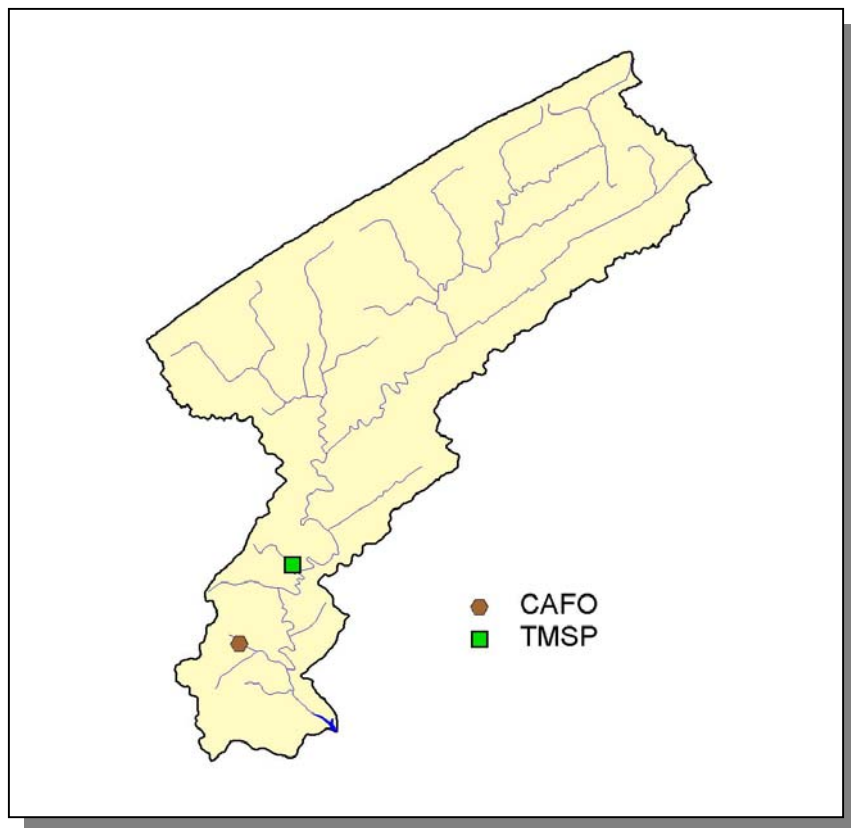


Figure 4-33. Location of Permits Issued in Subwatershed 060101040103. More information, including the names of facilities, is provided in Appendix IV.



Figure 4-34. Location of Concentrated Animal Feeding Operations (CAFO) in Subwatershed 060101040103. More information, including the names of facilities, is provided in Appendix IV.

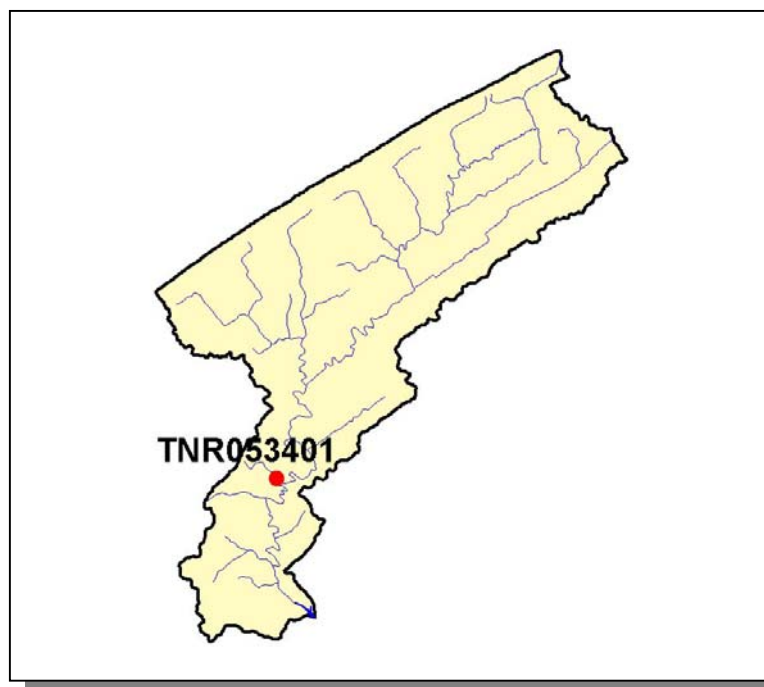


Figure 4-35. Location of TMSP Sites in Subwatershed 060101040103. More information, including the names of facilities, is provided in Appendix IV.

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4.2.A.iii.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
2,153	4,172	103	7	51	28

Table 4-27. Summary of Livestock Count Estimates in Subwatershed 060101040103. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Hancock	7,079	14,311	89	364	0	67
Hawkins	18,796	36,429	903	1,079	442	243

Table 4-28. Summary of Livestock Count Estimates in Hancock and Hawkins Counties. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.

County	INVENTORY		REMOVAL RATE	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Hancock	92.9	92.9	2.7	14.2
Hawkins	177.4	177.4	0.4	2.1

Table 4-29. Forest Acreage and Annual Removal Rates (1987-1994) in Hancock and Hawkins Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.27
Grass (Hayland)	0.56
Legumes, Grass (Hayland)	0.40
Legumes (Hayland)	0.16
Grass, Forbs, Legumes (Mixed Pasture)	0.54
Corn (Row Crops)	2.42
Tobacco (Row Crops)	16.43
Other Vegetable and Truck Crops	33.50
Farmsteads and Ranch Headquarters	0.40

Table 4-30. Annual Estimated Total Soil Loss in Subwatershed 060101040103.

4.2.A.iv. 060101040104 (Beech Creek).

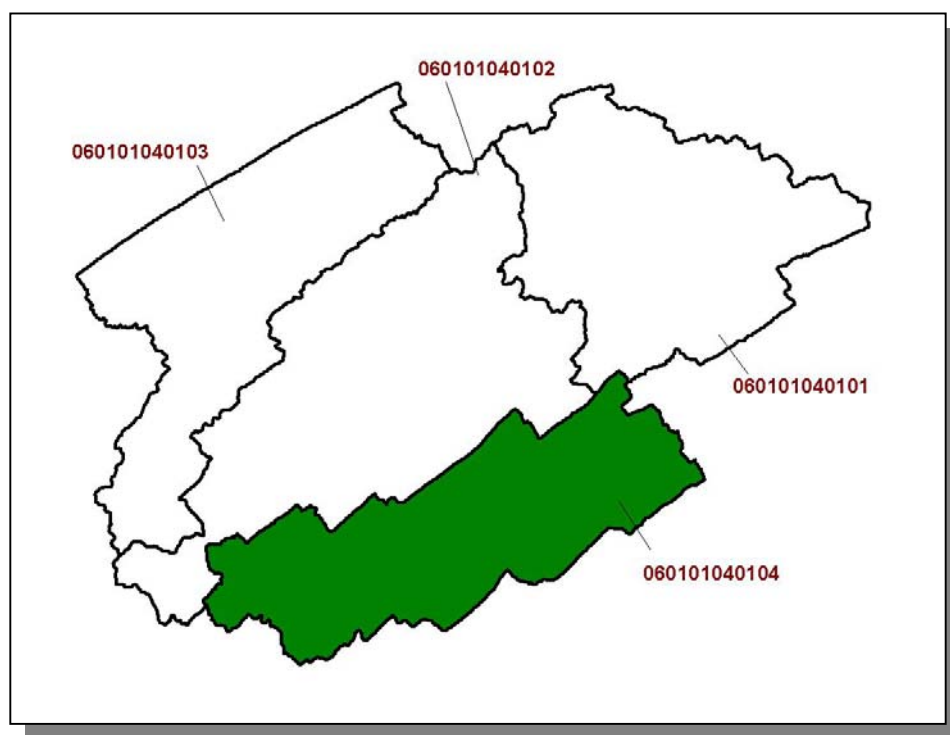


Figure 4-36. Location of Subwatershed 060101040104. All HUC-12 subwatershed boundaries are shown for reference.

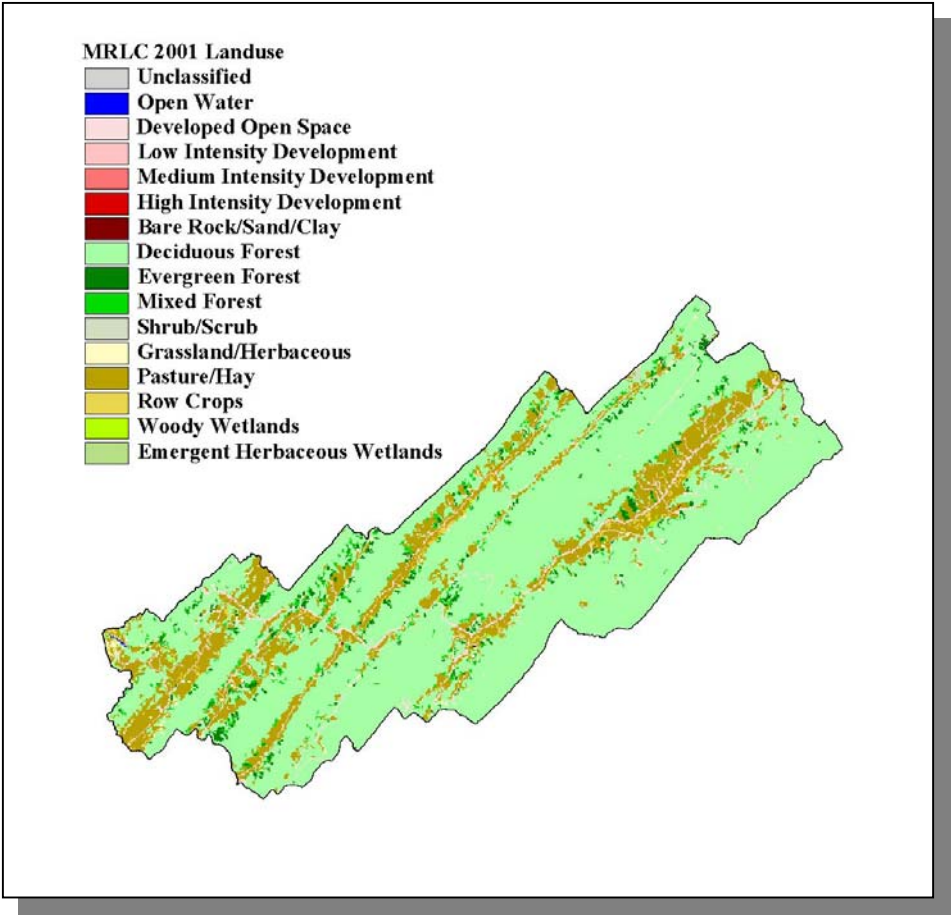


Figure 4-37. Illustration of Land Use Distribution in Subwatershed 060101040104.

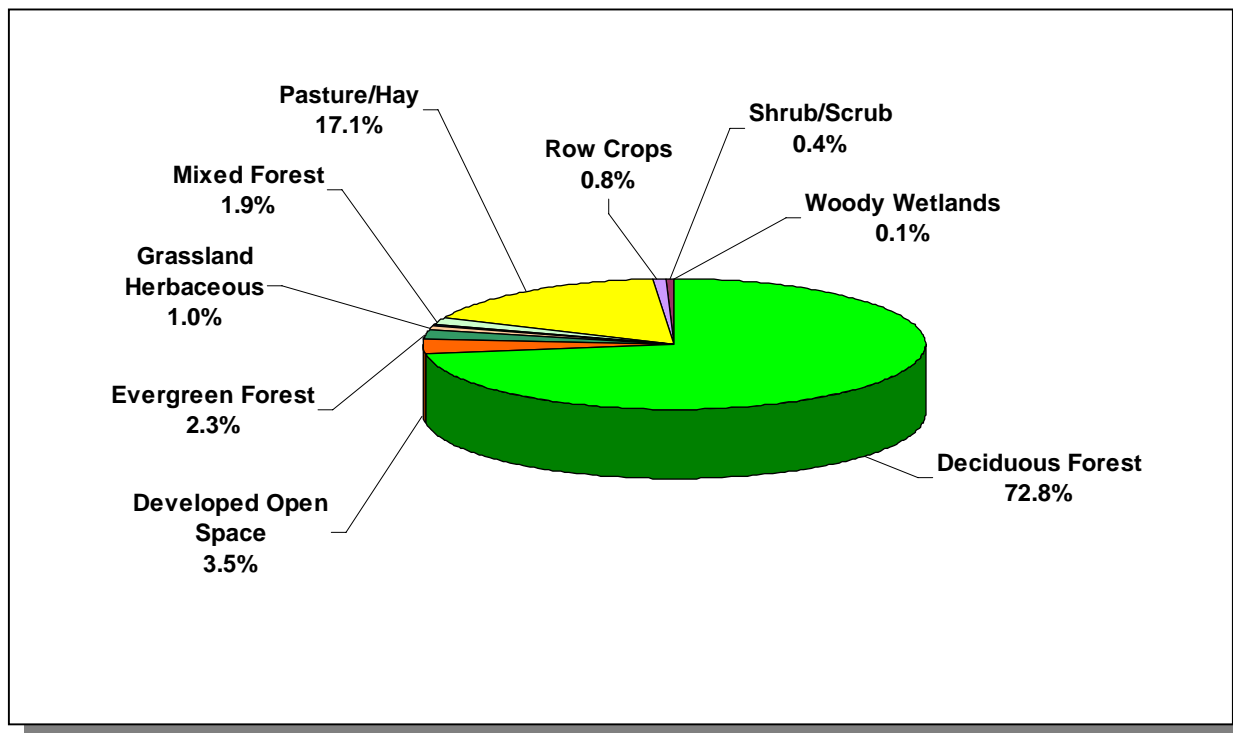


Figure 4-38. Land Use Distribution in Subwatershed 060101040104. More information is provided in Appendix IV.

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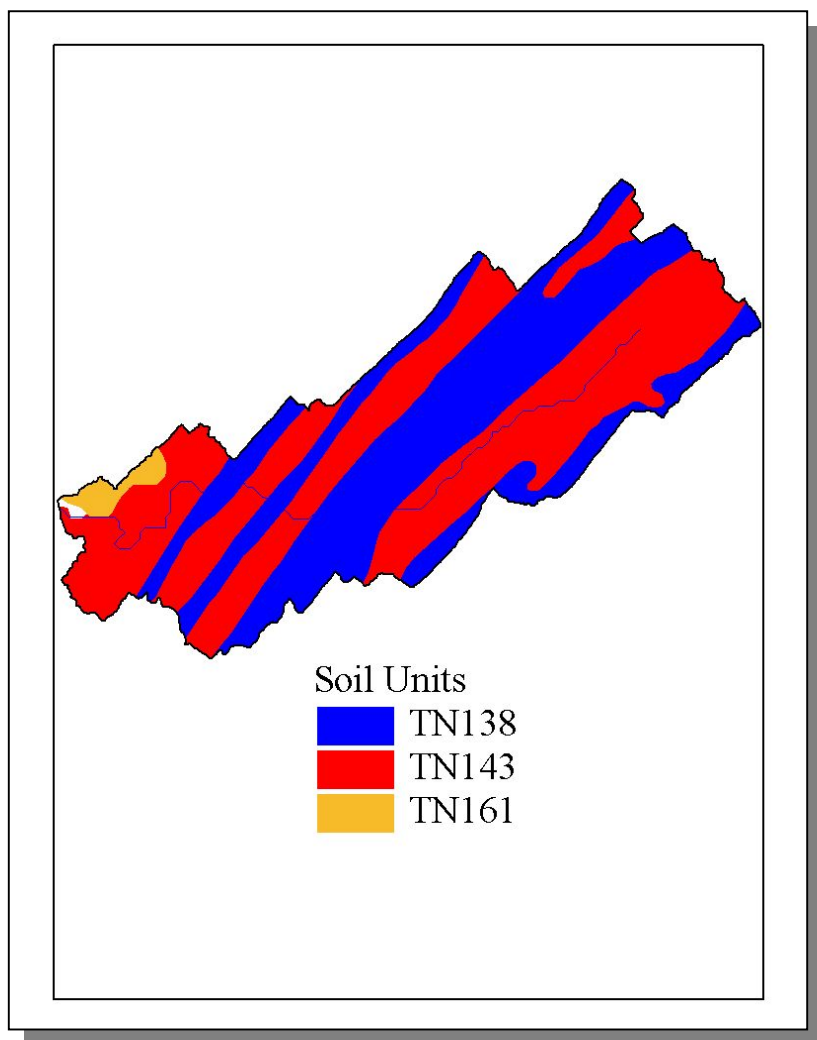


Figure 4-39. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040104.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN138	0.00	C	2.48	4.26	Sandy Loam	0.22
TN143	0.00	C	1.22	6.44	Loam	0.32
TN161	7.00	C	1.41	5.11	Loam	0.31

Table 4-31. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040104. The definition of "Hydrologic Group" is provided in Appendix IV.

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County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-2000)
	1990	1997	2000		1990	1997	2000	
Greene	55,853	59,369	62,009	0.23	128	136	144	12.5
Hawkins	44,565	48,821	53,563	10.14	4,520	4,952	5,432	20.2
Sullivan	143,596	150,371	153,048	0.11	165	173	176	6.7
Washington	92,315	101,136	107,198	0.11	103	113	119	15.5
Total	336,329	359,929	376,718		4,916	5,374	5,871	19.4

Table 4-32. Population Estimates in Subwatershed 060101040104.

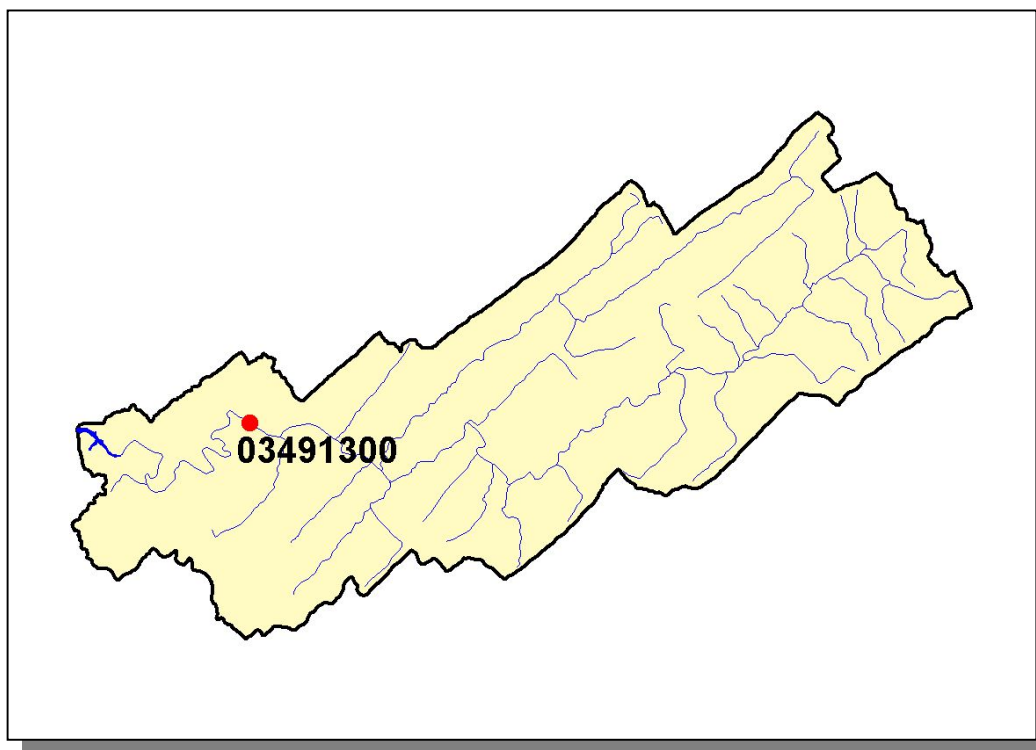


Figure 4-40. Location of Historical Streamflow Data Collection Sites in Subwatershed 060101040104. More information is provided in Appendix IV.

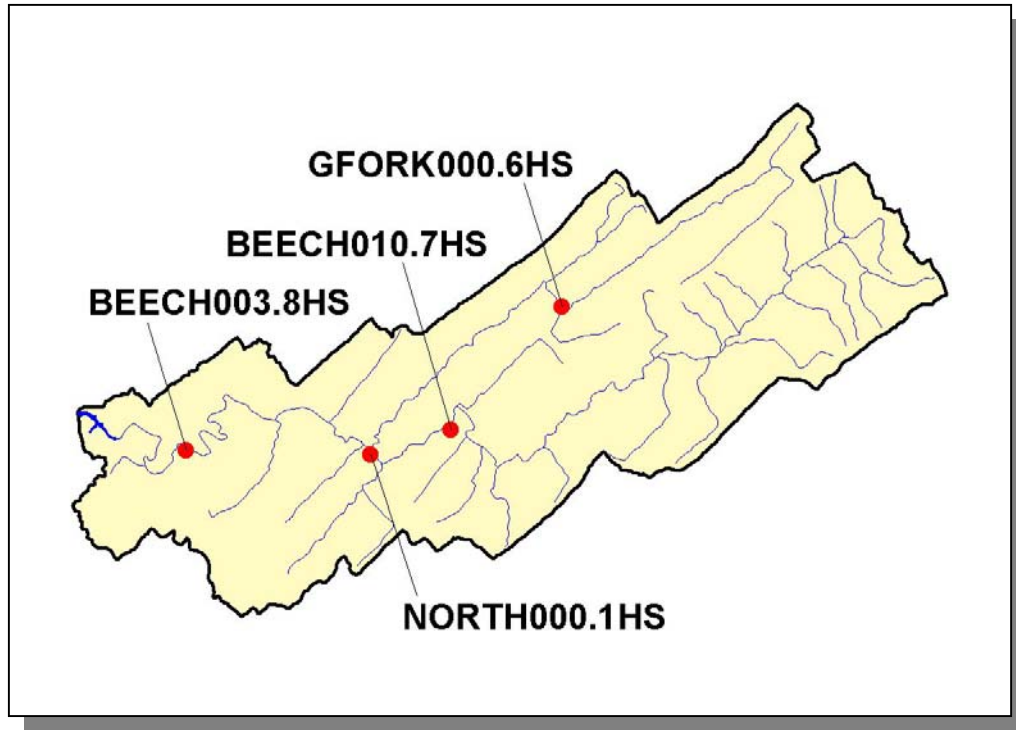


Figure 4-41. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 060101040104. More information, including site names and locations, is provided in Appendix IV.

4.2.A.iv.a. Point Source Contributions.

There are no point source contributions in this subwatershed.

4.2.A.iv.b. Nonpoint Source Contributions.

LIVESTOCK (COUNTS)						
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
971	1,897	49	3	262	22	12

Table 4-33. Summary of Livestock Count Estimates in Subwatershed 060101040104. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

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LIVESTOCK COUNTS							
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
Greene	33,962	72,582	7,282	1,190	4,908,815	495	226
Hawkins	18,796	36,429	903	1,079	0	442	243
Sullivan	13,322	29,386	1,075	594	0	104	69
Washington	23,073	53,186	5,190	38	0	262	353

Table 4-34. Summary of Livestock Count Estimates in Greene, Hawkins, Sullivan, and Washington Counties. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

County	INVENTORY		REMOVAL RATE	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Greene	180.0	171.8	2.0	10.5
Hawkins	177.4	177.4	0.4	2.1
Sullivan	123.7	123.7	0.1	0.3
Washington	54.8	50.3	0.3	0.2

Table 4-35. Forest Acreage and Annual Removal Rates (1987-1994) in Greene, Hawkins, Sullivan, and Washington Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.28
Grass (Hayland)	0.55
Legumes, Grass (Hayland)	0.39
Legumes (Hayland)	0.16
Grass, Forbs, Legumes (Mixed Pasture)	0.55
Corn (Row Crops)	14.40
Tobacco (Row Crops)	16.18
Other Vegetable and Truck Crops	32.68
Other Land in Farms	0.02
Farmsteads and Ranch Headquarters	0.44

Table 4-36. Annual Estimated Total Soil Loss in Subwatershed 060101040104.

4.2.B. 0601010402.

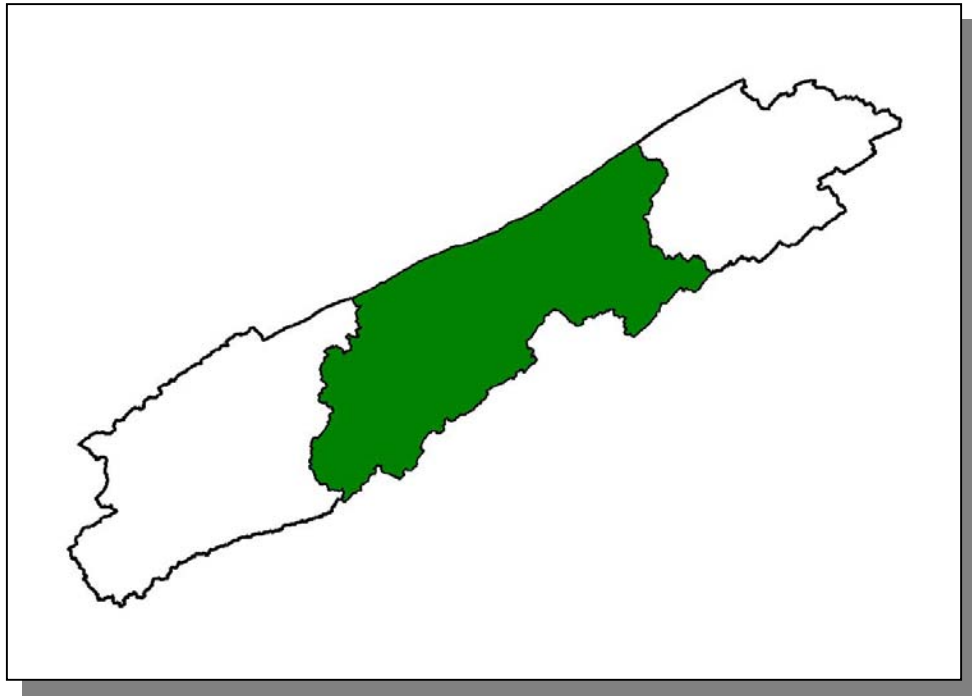


Figure 4-42. Location of Subwatershed 0601010402. All Holston River HUC-10 subwatershed boundaries are shown for reference.

4.2.B.i. 060101040201 (Cherokee Lake).

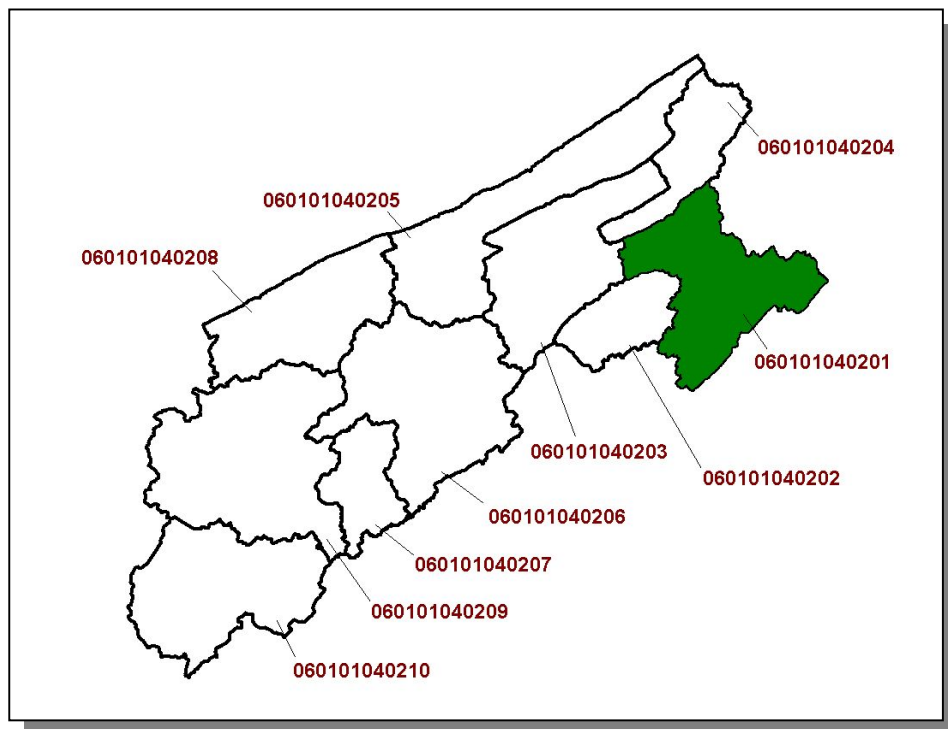


Figure 4-43. Location of Subwatershed 060101040201. All HUC-12 subwatershed boundaries are shown for reference.

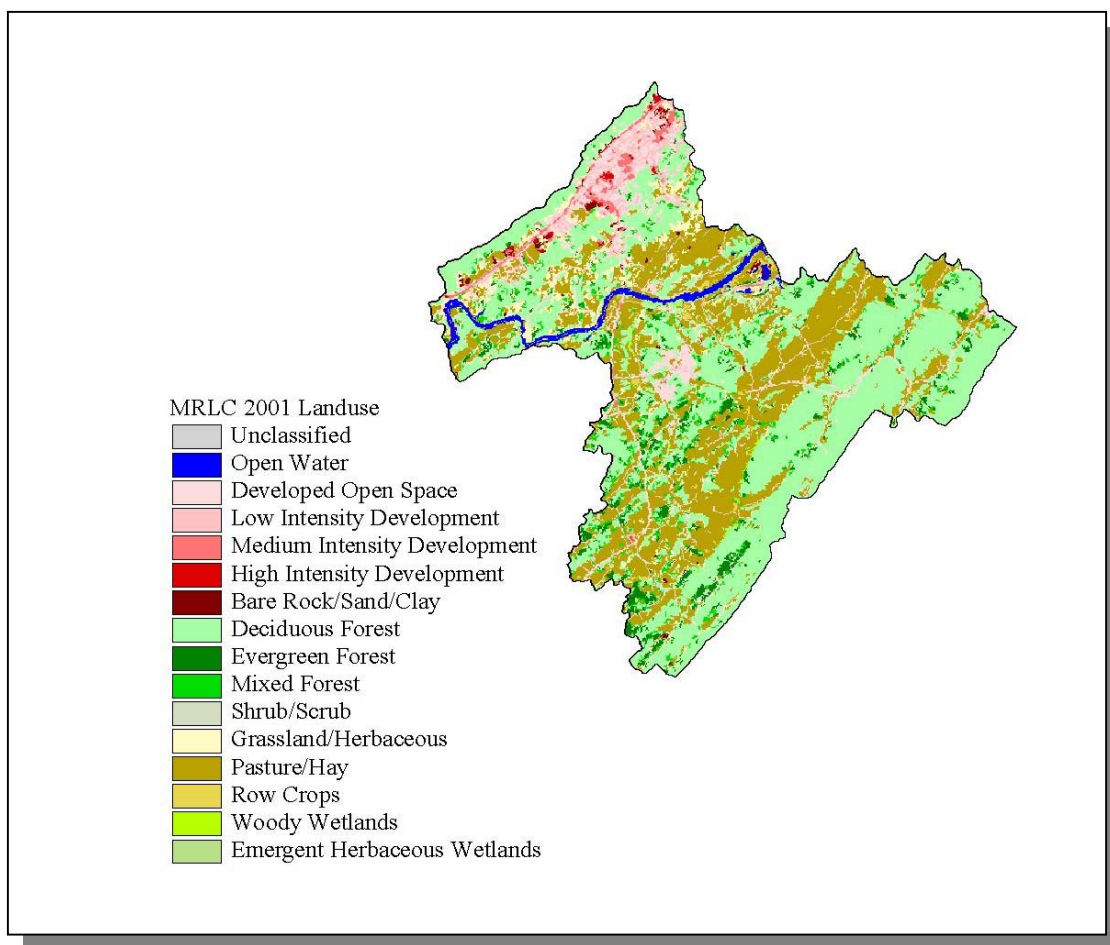


Figure 4-44. Illustration of Land Use Distribution in Subwatershed 060101040201.

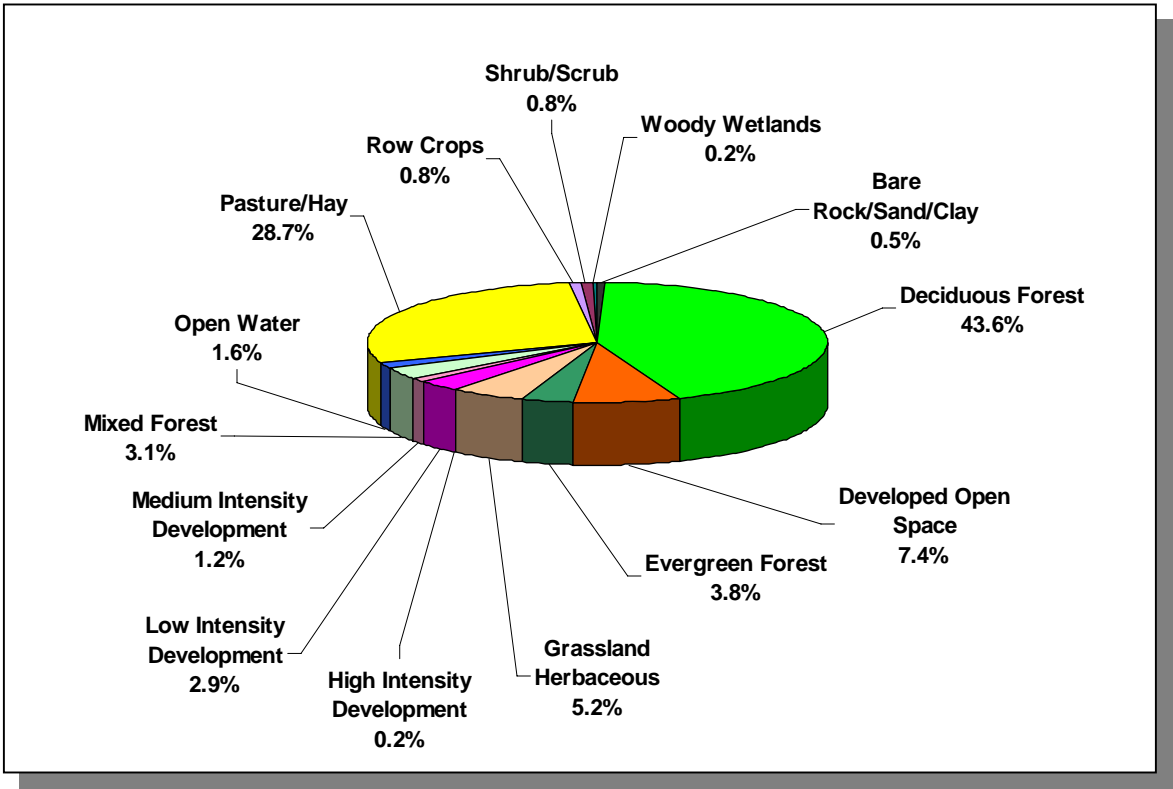


Figure 4-45. Land Use Distribution in Subwatershed 060101040201. More information is provided in Appendix IV.

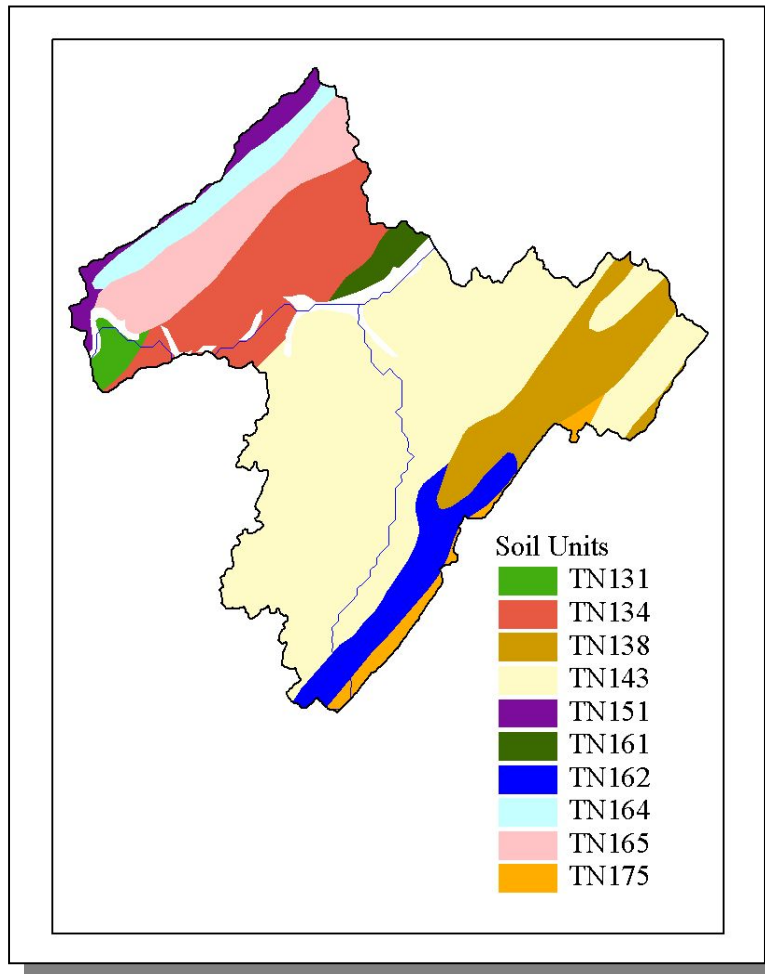


Figure 4-46. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040201.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN131	0.00	C	1.17	4.95	Silty Loam	0.33
TN134	0.00	B	1.38	5.18	Loam	0.31
TN138	0.00	C	2.48	4.26	Sandy Loam	0.22
TN143	0.00	C	1.22	6.44	Loam	0.32
TN151	0.00	C	2.88	4.75	Loam	0.40
TN161	7.00	C	1.41	5.11	Loam	0.31
TN162	1.00	C	1.52	6.20	Loam	0.36
TN164	0.00	C	1.48	5.15	Loam	0.25
TN165	0.00	B	1.79	5.51	Silty Loam	0.32
TN175	0.00	B	1.49	5.23	Loam	0.30

Table 4-37. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040201. The definition of "Hydrologic Group" is provided in Appendix IV.

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County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-2000)
	1990	1997	2000		1990	1997	2000	
Greene	55,853	59,369	62,909	0.34	190	202	214	12.6
Hawkins	44,565	48,821	53,563	8.71	3,880	4,250	4,663	20.2
Total	100,418	108,190	116,472		4070	4,452	4,877	19.8

Table 4-38. Population Estimates in Subwatershed 060101040201.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Rogersville	Hawkins	4,149	1,995	1,833	133	29

Table 4-39. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 060101040201.

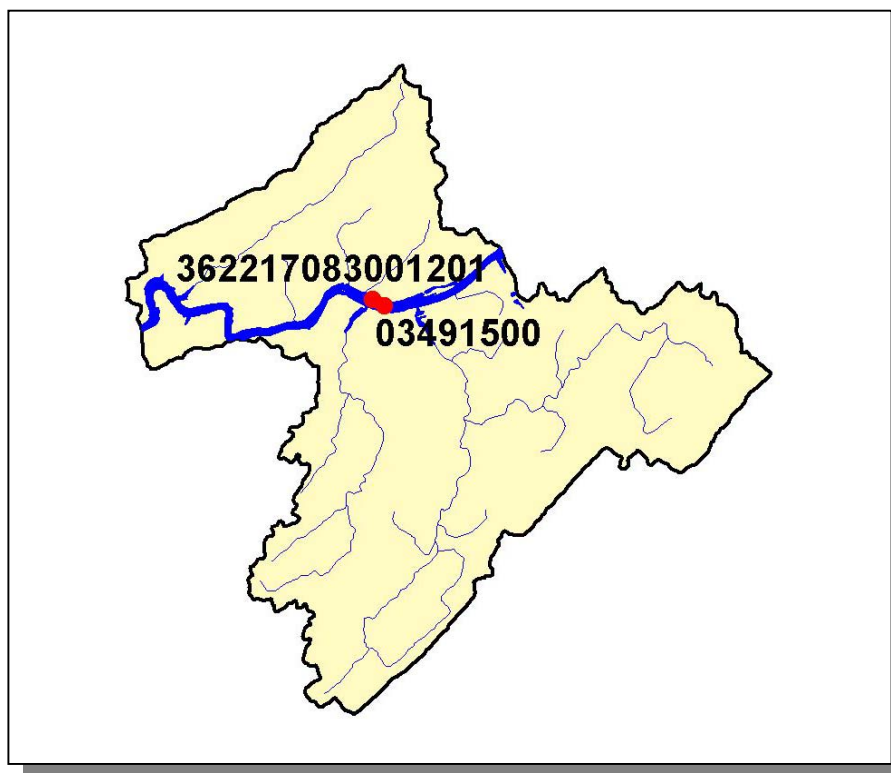


Figure 4-47. Location of Historical Streamflow Data Collection Sites in Subwatershed 060101040201. More information is provided in Appendix IV.

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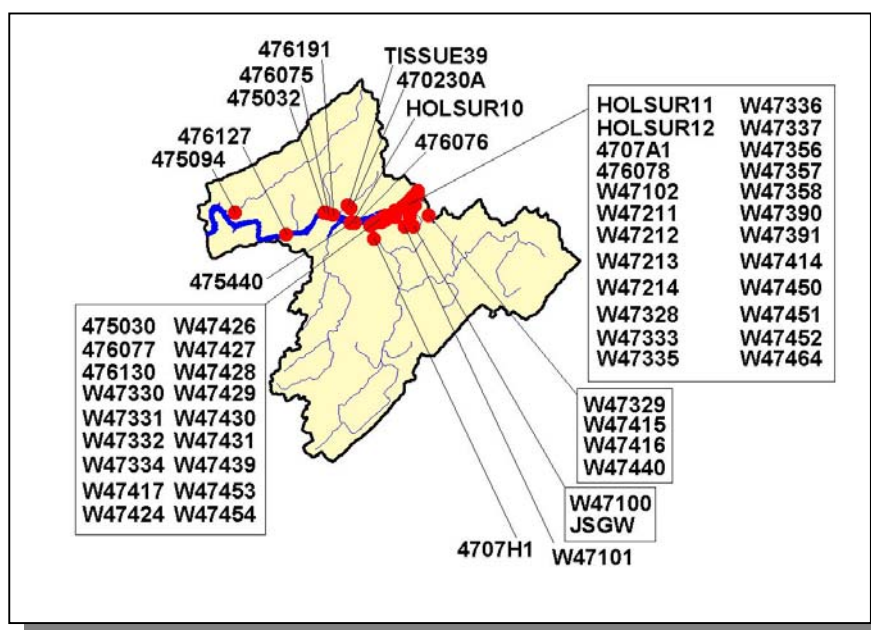


Figure 4-48. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 060101040201. More information, including site names and locations, is provided in Appendix IV.

4.2.B.i.a. Point Source Contributions.

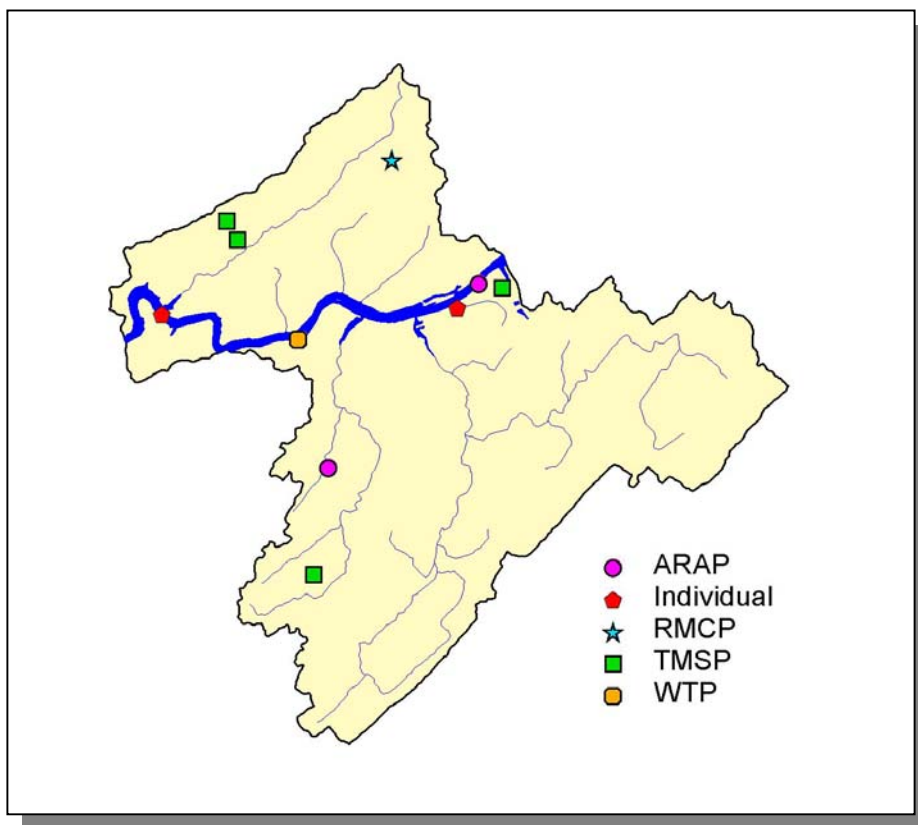


Figure 4-49. Location of Permits Issued in Subwatershed 060101040201. More information, including the names of facilities, is provided in Appendix IV.

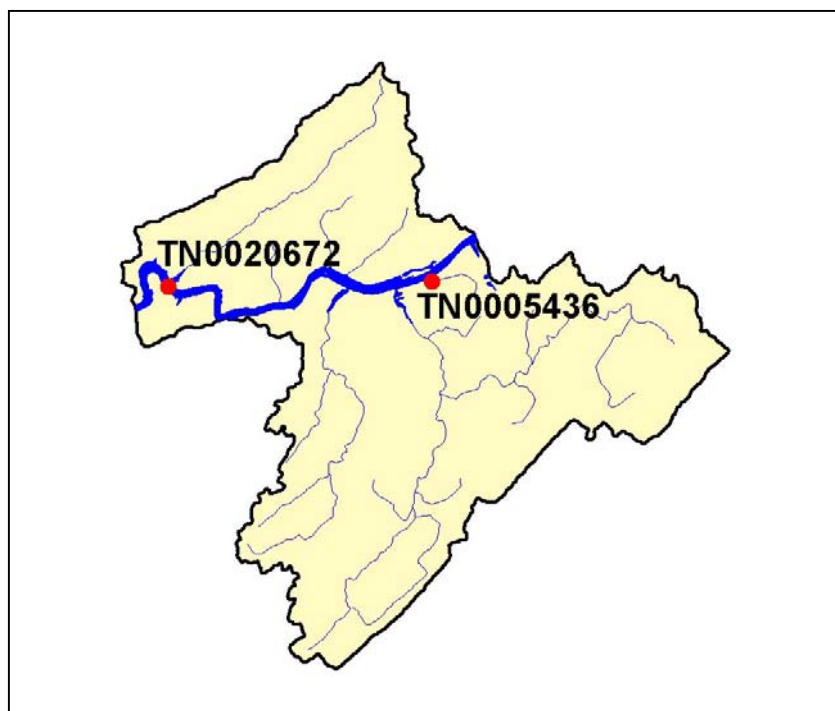


Figure 4-50. Location of Active NPDES Sites in Subwatershed 060101040201. More information, including the names of facilities, is provided in Appendix IV.

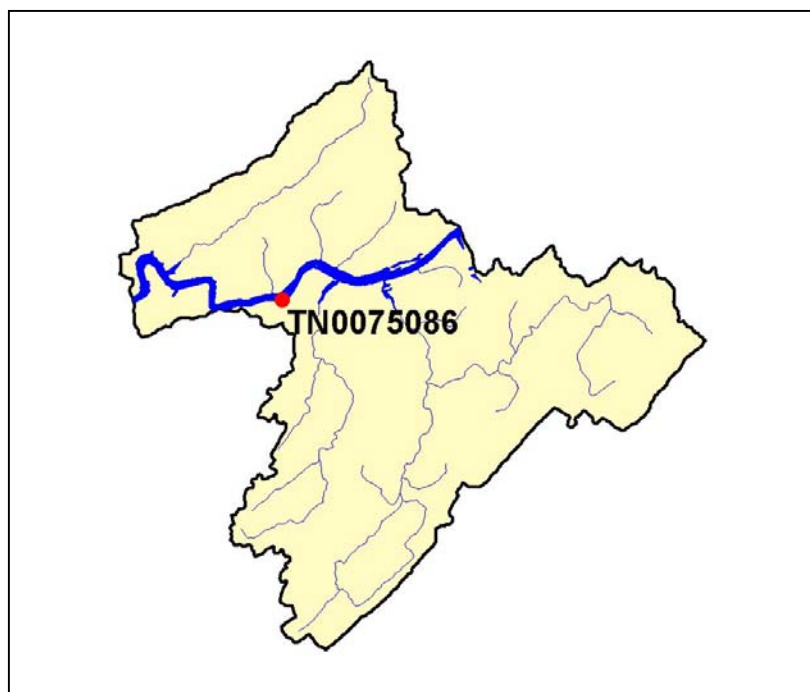


Figure 4-51. Location of Water Treatment Plants in Subwatershed 060101040201. More information, including the names of facilities, is provided in Appendix IV.



Figure 4-52. Location of Ready Mix Concrete Plants (RMCP) in Subwatershed 060101040201. More information is provided in Appendix IV.

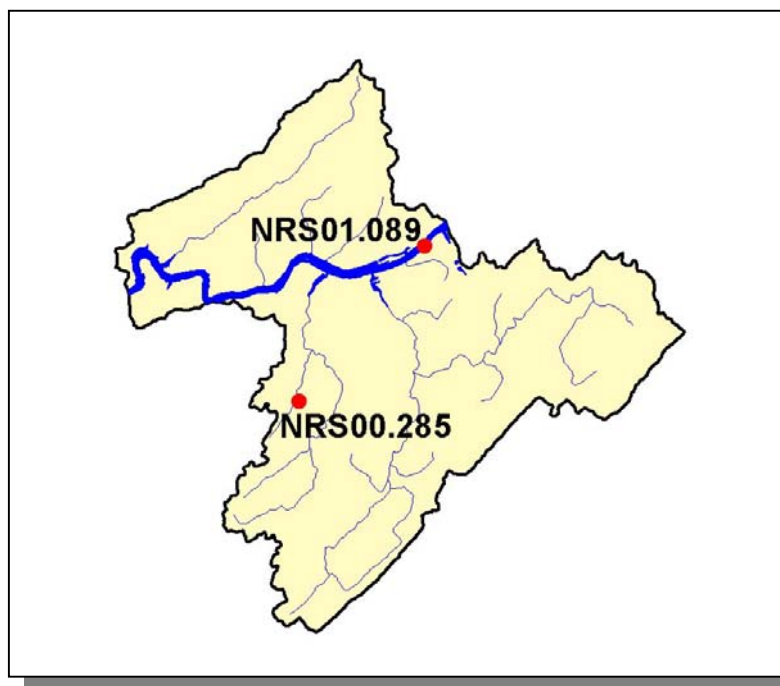


Figure 4-53. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 060101040201. More information is provided in Appendix IV.

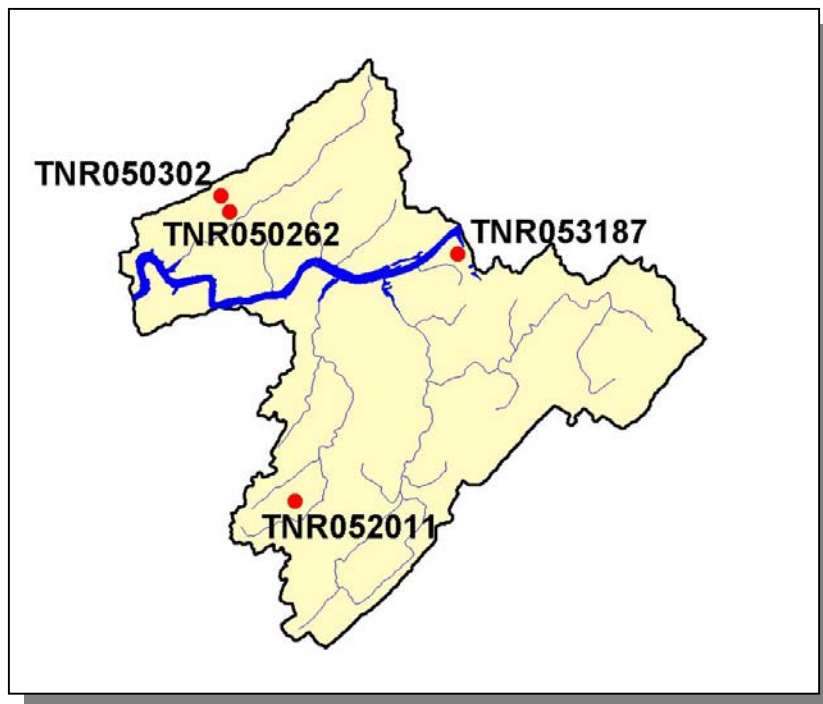


Figure 4-54. Location of TMSF Sites in Subwatershed 060101040201. More information, including the names of facilities, is provided in Appendix IV.

4.2.B.i.a.i. Dischargers to Water Bodies Listed on the 2004 303(d) List

There is one NPDES facility discharging to water bodies listed on the 2004 303(d) list in Subwatershed 060101040201:

- TN0020672 (Rogersville STP) discharges to the Holston River @ RM 99.7

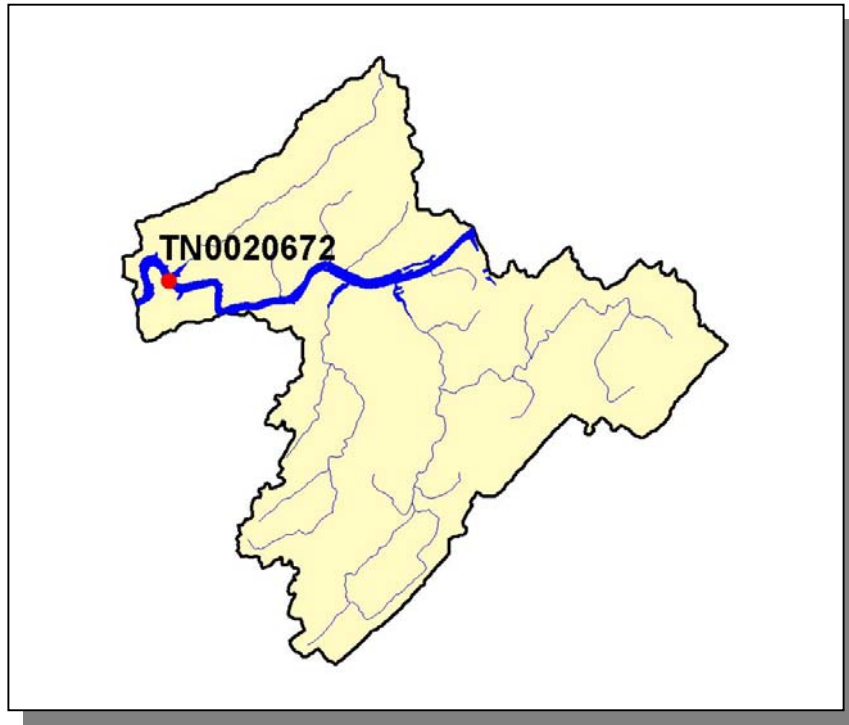


Figure 4-55. Location of NPDES Dischargers to Water Bodies Listed on the 2004 303(d) List in Subwatershed 060101040201. More information, including the names of facilities, is provided in Appendix IV.

PERMIT #	1Q10	3Q10	7Q10	3Q20	QDESIGN
TN0020672	363				

Table 4-40. Receiving Stream Flow Information for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 060101040201. Data are in million gallons per day (MGD). Data were obtained from the USGS publication *Flow Duration and Low Flows of Tennessee Streams Through 1992* or from permit files.

PERMIT #	FLOW	DISCHARGE RATIO
TN0020672	X	X

Table 4-41. Monitoring Requirements for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 060101040201.

PERMIT #	WET	CBOD ₅	FECAL COLIFORM	TRC	TSS	SETTLABLE SOLIDS	DO	pH
TN0020672	X	X	X	X	X	X	X	X

Table 4-42. Parameters Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 060101040201. WET, Whole Effluent Toxicity; CBOD₅, Carbonaceous Biochemical Oxygen Demand (5-Day); TRC, Total Residual Chlorine; TSS, Total Suspended Solids.

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4.2.B.i.b. Nonpoint Source Contributions.

LIVESTOCK (COUNTS)						
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
2,081	4,034	101	7	1,095	49	27

Table 4-43. Summary of Livestock Count Estimates in Subwatershed 060101040201.

According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

LIVESTOCK COUNTS							
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
Greene	33,962	72,582	7,282	1,190	4,908,815	495	226
Hawkins	18,796	36,429	903	1,079	0	442	243

Table 4-44. Summary of Livestock Count Estimates in Greene and Hawkins Counties.

According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

County	INVENTORY		REMOVAL RATE	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Greene	180	171.8	2.0	10.5
Hawkins	177.4	177.4	0.4	2.1

Table 4-45. Forest Acreage and Annual Removal Rates (1987-1994) in Greene and Hawkins Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.27
Grass (Hayland)	0.54
Legumes, Grass (Hayland)	0.40
Legumes (Hayland)	0.16
Grass, Forbs, Legumes (Mixed Pasture)	0.53
Corn (Row Crops)	16.75
Tobacco (Row Crops)	16.35
Other Vegetable and Truck Crops	32.10
Farmsteads and Ranch Headquarters	0.46

Table 4-46. Annual Estimated Total Soil Loss in Subwatershed 060101040201.

4.2.B.ii. 060101040202 (Robertson Creek).

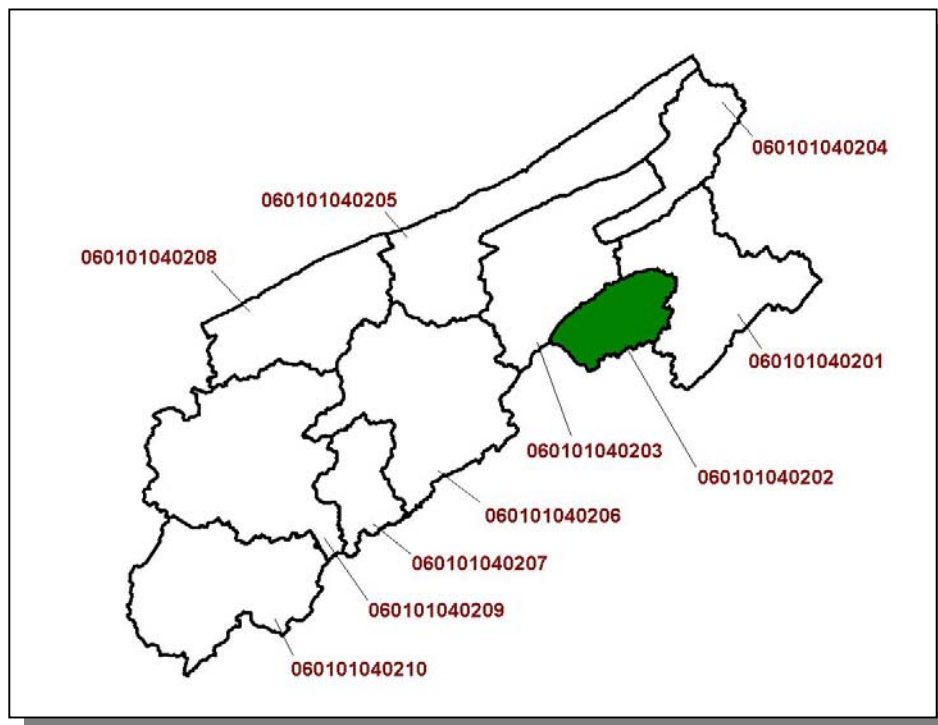


Figure 4-56. Location of Subwatershed 060101040202. All HUC-12 subwatershed boundaries are shown for reference.

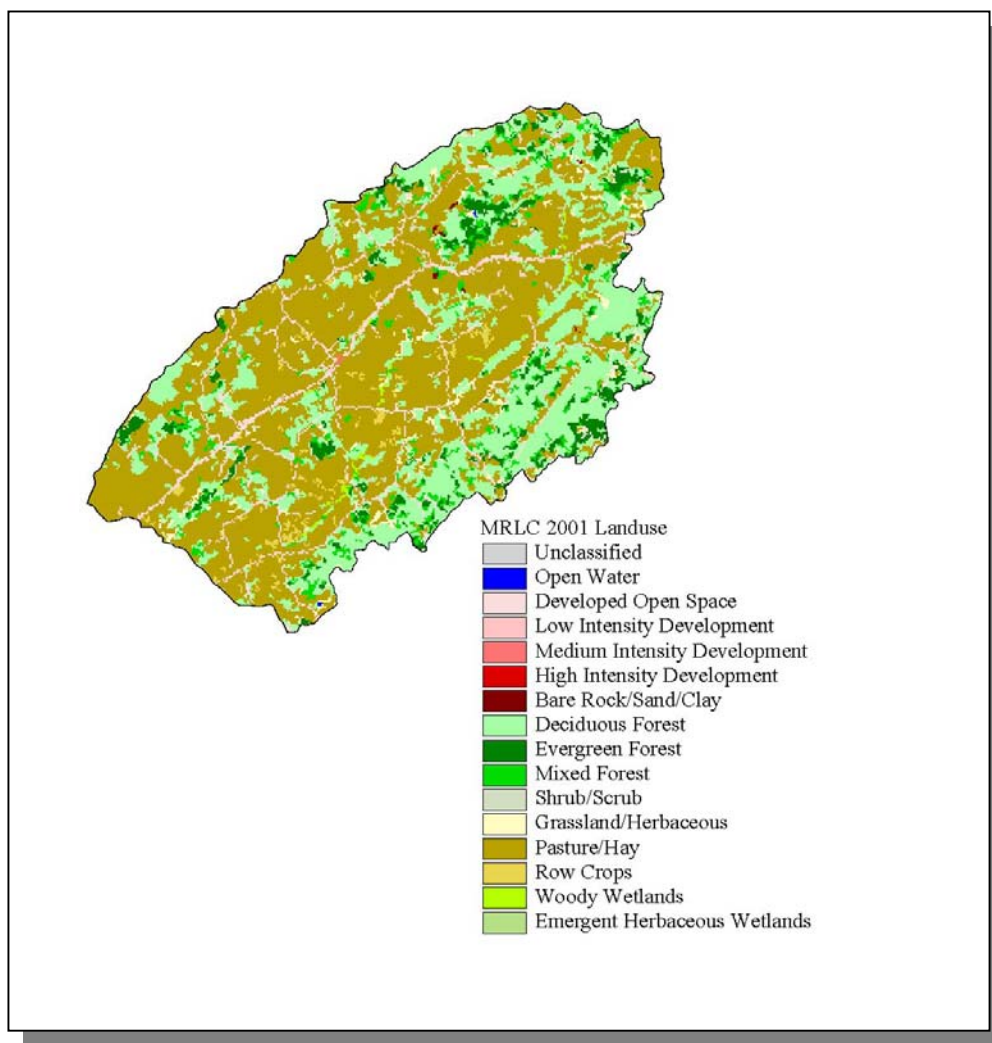


Figure 4-57. Illustration of Land Use Distribution in Subwatershed 060101040202.

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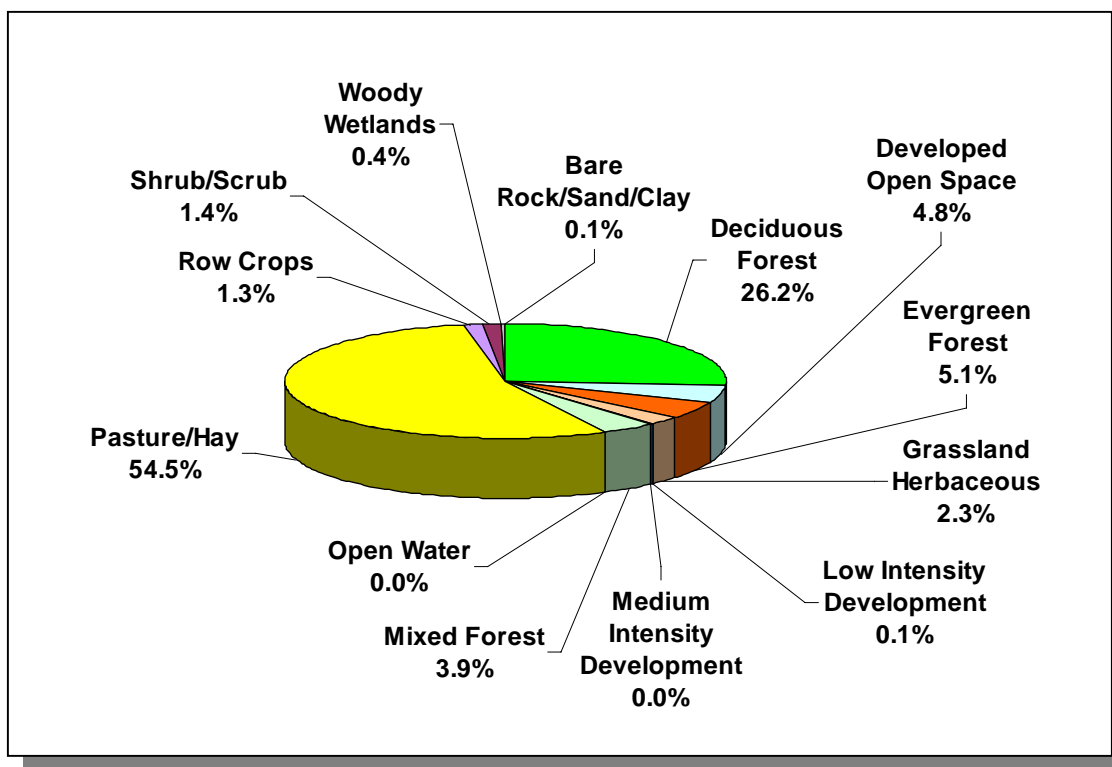


Figure 4-58. Land Use Distribution in Subwatershed 060101040202. More information is provided in Appendix IV.

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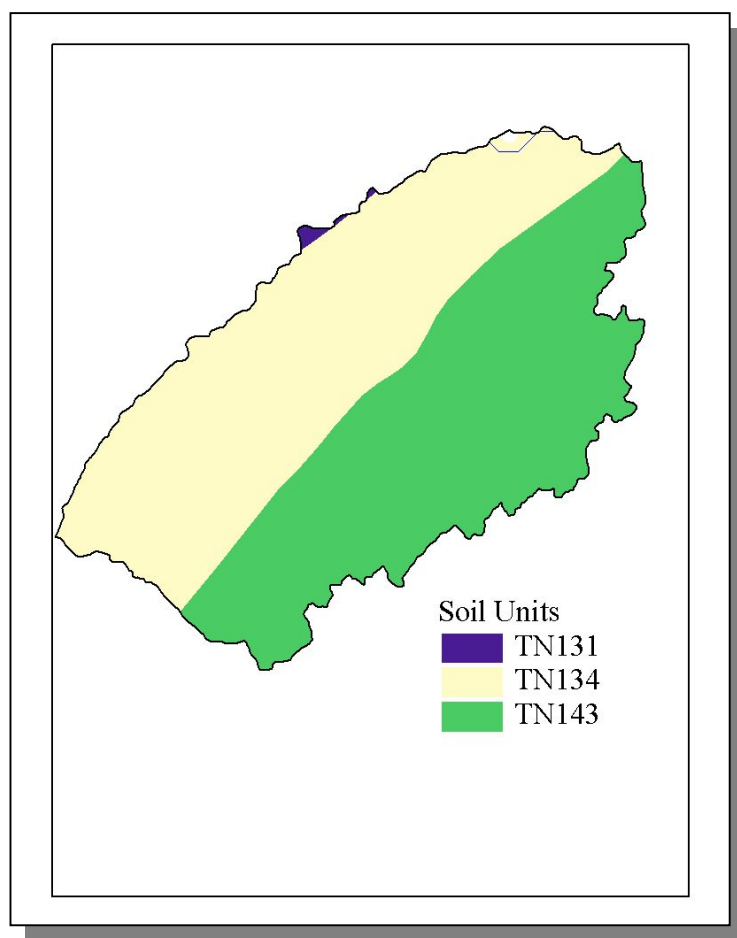


Figure 4-59. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040202.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN131	0.00	C	1.17	4.95	Silty Loam	0.33
TN134	0.00	B	1.38	5.18	Loam	0.31
TN143	0.00	C	1.22	6.44	Loam	0.32

Table 4-47. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040202. The definition of “Hydrologic Group” is provided in Appendix IV.

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County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-2000)
	1990	1997	2000		1990	1997	2000	
Hawkins	44,565	48,821	53,563	3.72	1,656	1,814	1,991	20.2

Table 4-48. Population Estimates in Subwatershed 060101040202.



Figure 4-60. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 060101040202. More information, including site names and locations, is provided in Appendix IV.

4.2.B.ii.a. Point Source Contributions.

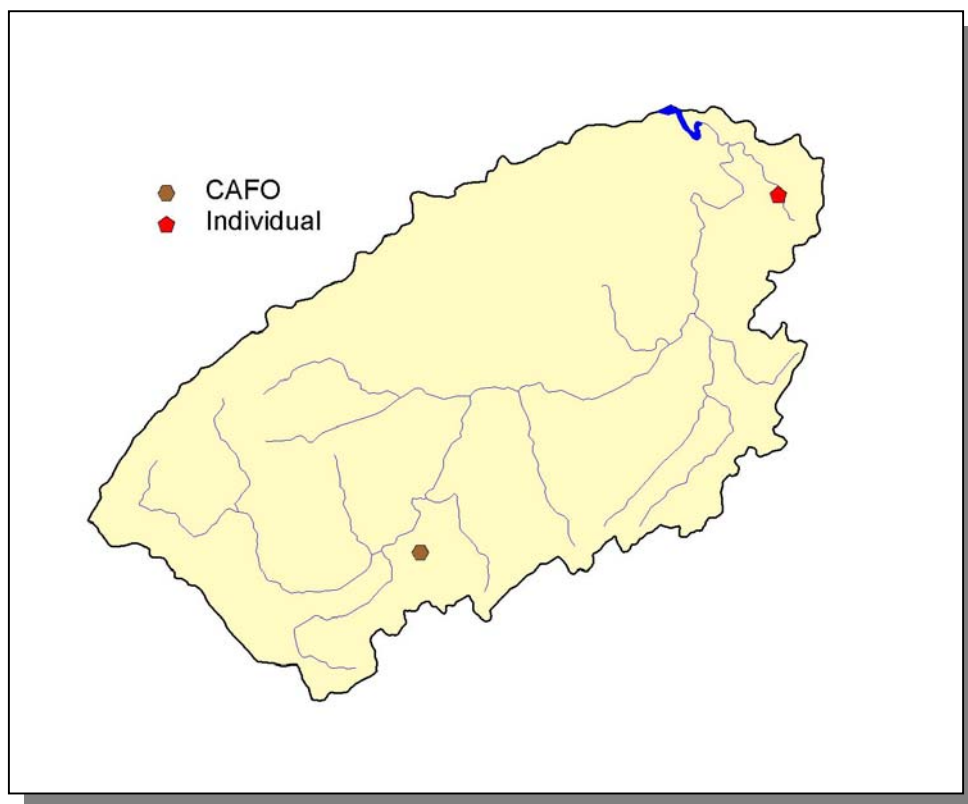


Figure 4-61. Location of Permits Issued in Subwatershed 060101040202. More information, including the names of facilities, is provided in Appendix IV.



Figure 4-62. Location of Active NPDES Sites in Subwatershed 060101040202. More information, including the names of facilities, is provided in Appendix IV.

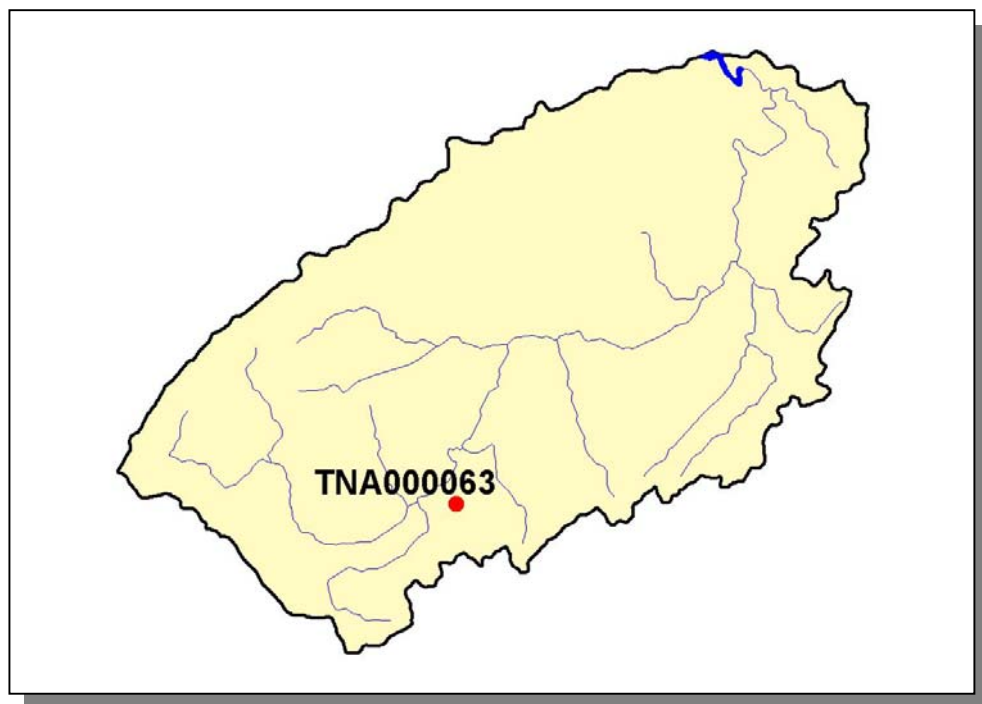


Figure 4-63. Location of Concentrated Animal Feeding Operations (CAFO) in Subwatershed 060101040202. More information, including the names of facilities, is provided in Appendix IV.

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4.2.B.ii.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
1,553	3,011	75	5	37	20

Table 4-49. Summary of Livestock Count Estimates in Subwatershed 060101040202. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Hawkins	18,796	36,429	903	1,079	442	243

Table 4-50. Summary of Livestock Count Estimates in Greene, Hawkins, Sullivan, and Washington Counties. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.

County	INVENTORY		REMOVAL RATE	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Hawkins	177.4	177.4	0.4	2.1

Table 4-51. Forest Acreage and Annual Removal Rates (1987-1994) in Hawkins County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.26
Grass (Hayland)	0.56
Legumes, Grass (Hayland)	0.40
Legumes (Hayland)	0.16
Grass, Forbs, Legumes (Mixed Pasture)	0.54
Tobacco (Row Crops)	16.40
Other Vegetable and Truck Crops	33.50
Farmsteads and Ranch Headquarters	0.40

Table 4-52. Annual Estimated Total Soil Loss in Subwatershed 060101040202.

4.2.B.iii. 060101040203 (Cherokee Lake).

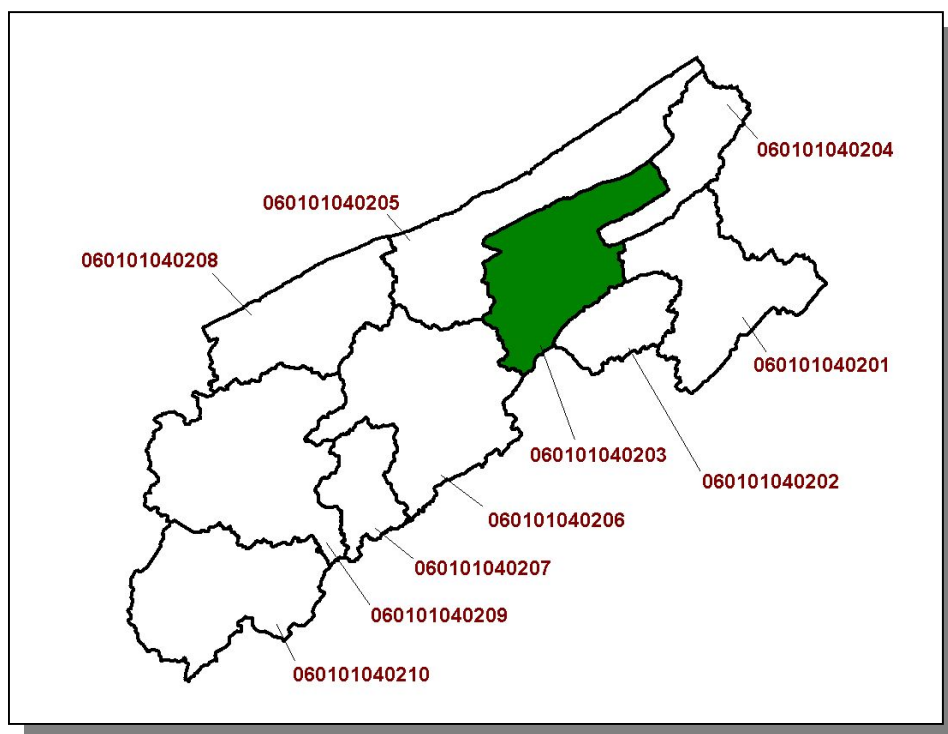


Figure 4-64. Location of Subwatershed 060101040203. All HUC-12 subwatershed boundaries are shown for reference.

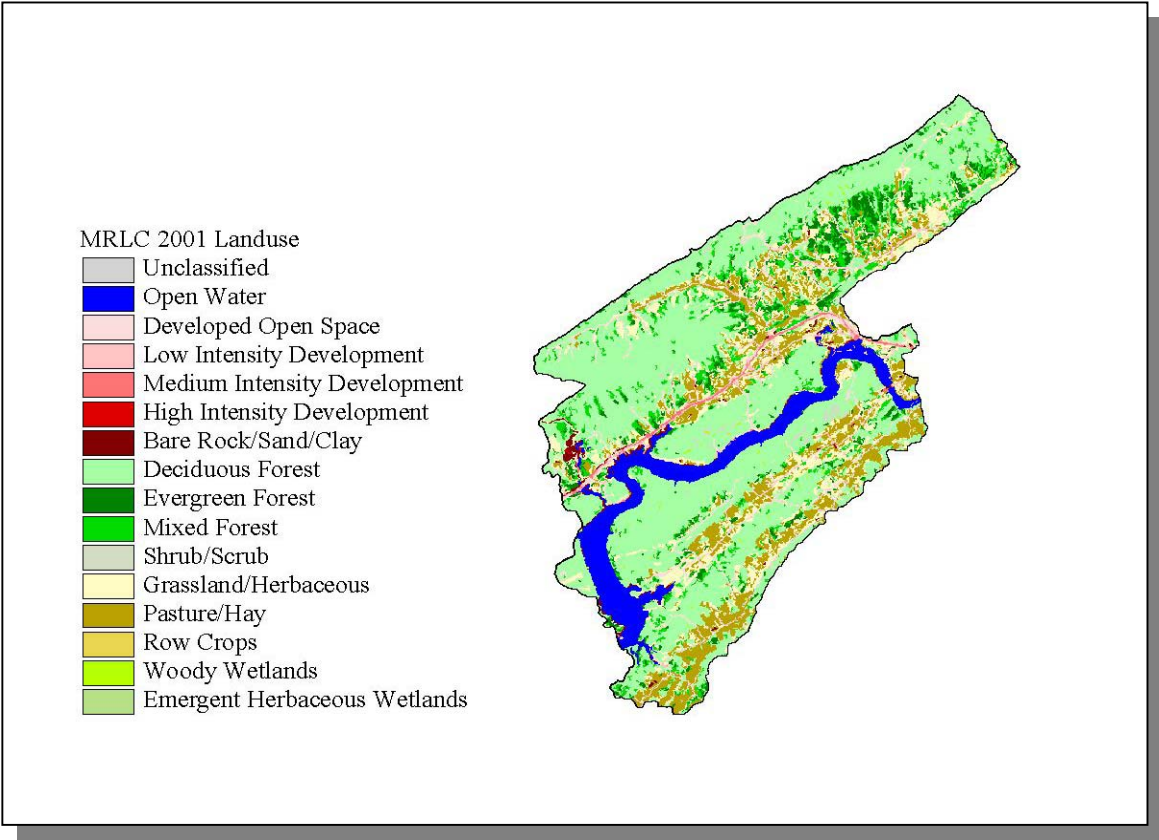


Figure 4-65. Illustration of Land Use Distribution in Subwatershed 060101040203.

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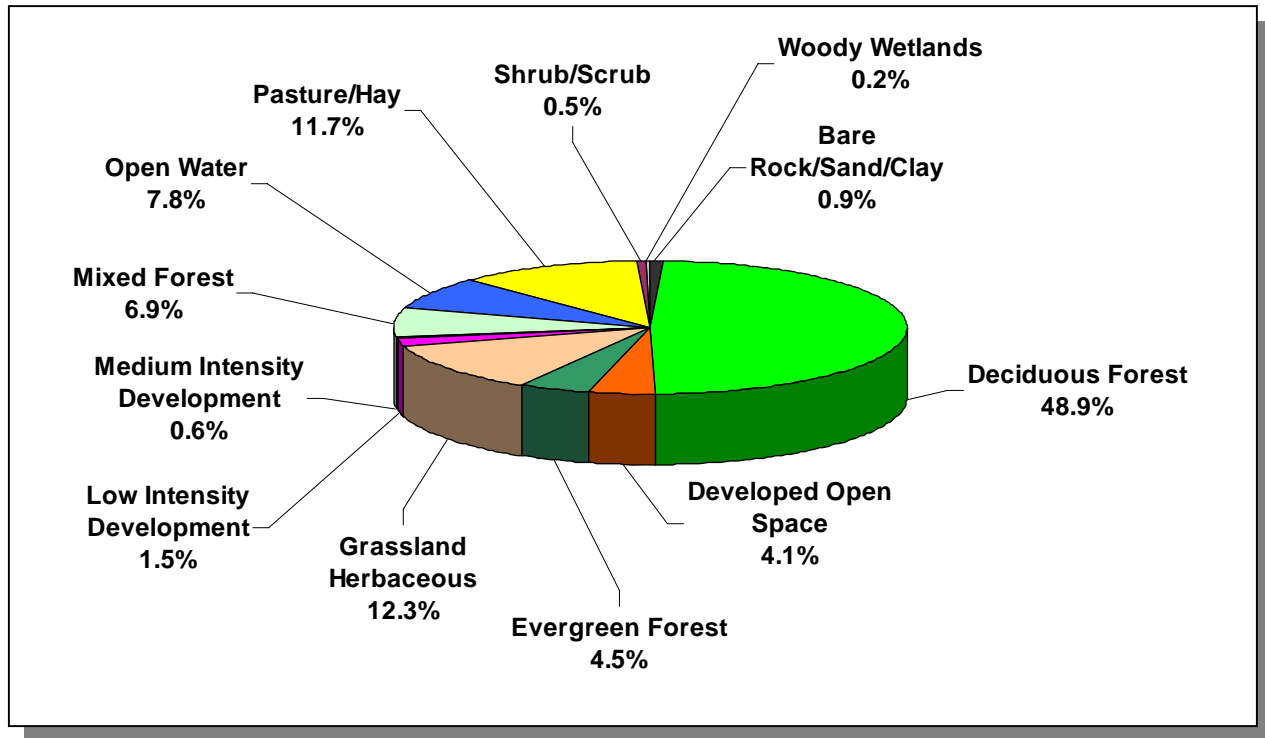


Figure 4-66. Land Use Distribution in Subwatershed 060101040203. More information is provided in Appendix IV.

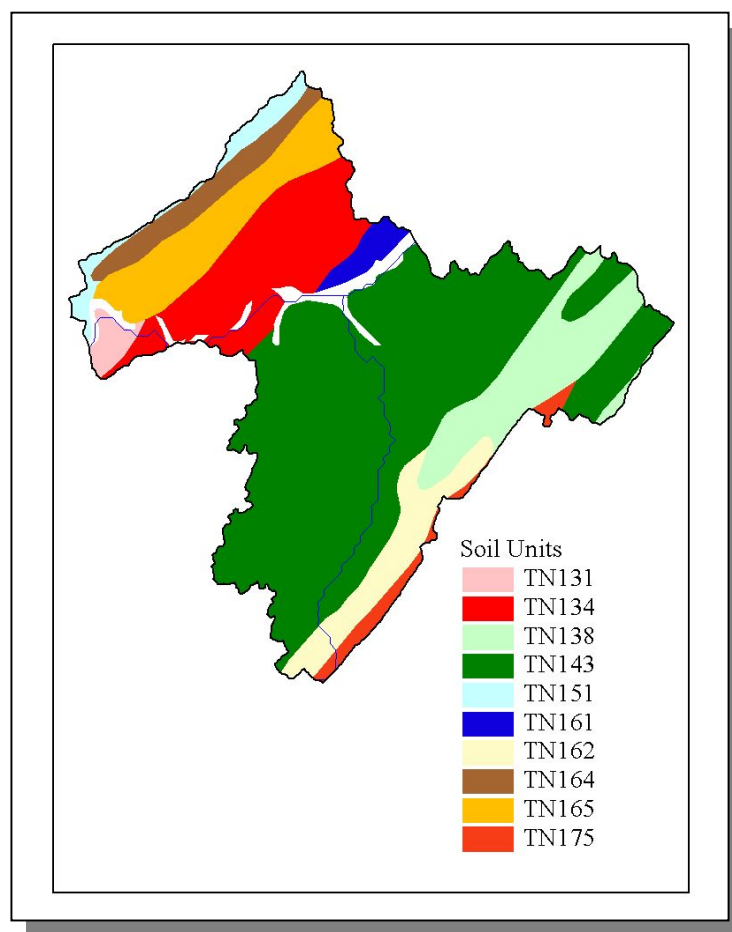


Figure 4-67. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040203.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN131	0.00	C	1.17	4.95	Silty Loam	0.33
TN134	0.00	B	1.38	5.18	Loam	0.31
TN138	0.00	C	2.48	4.26	Sandy Loam	0.22
TN143	0.00	C	1.22	6.44	Loam	0.32
TN151	0.00	C	2.88	4.75	Loam	0.40
TN161	7.00	C	1.41	5.11	Loam	0.31
TN162	1.00	C	1.52	6.20	Loam	0.36
TN164	0.00	C	4.48	5.15	Loam	0.25
TN165	0.00	B	1.79	5.51	Silty Loam	0.32
TN175	0.00	B	1.49	5.23	Loam	0.30

Table 4-53. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040203. The definition of "Hydrologic Group" is provided in Appendix IV.

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County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-2000)
	1990	1997	2000		1990	1997	2000	
Greene	55,853	59,369	62,909	0.34	190	202	214	12.6
Hawkins	44,565	48,821	53,563	8.71	3,880	4,250	4,663	20.2
Total	100,418	108,190	116,472		4,070	4,452	4,877	19.8

Table 4-54. Population Estimates in Subwatershed 060101040203.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Rogersville	Hawkins	4,149	1,995	1,833	133	29

Table 4-55. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 060101040203.

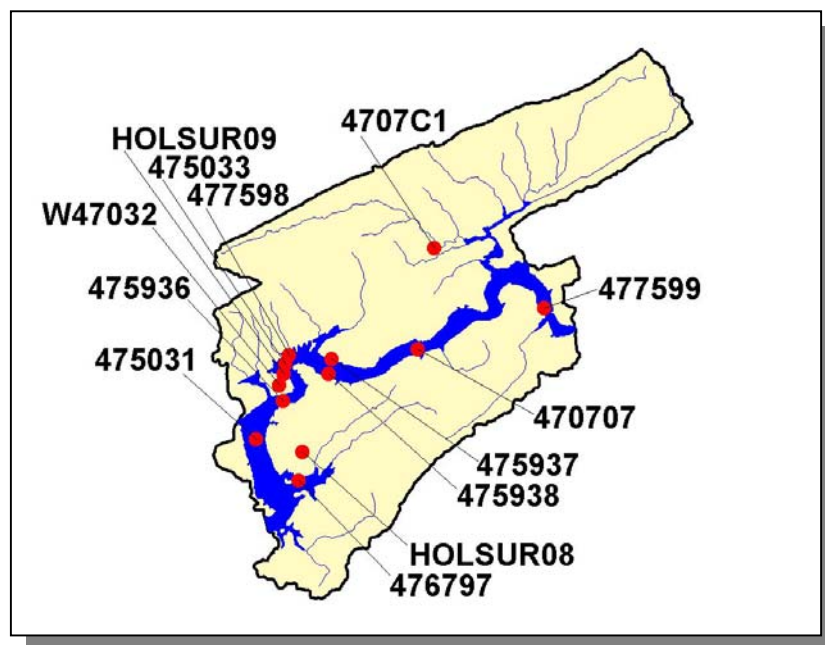


Figure 4-68. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 060101040203. More information, including site names and locations, is provided in Appendix IV.

4.2.B.iii.a. Point Source Contributions.

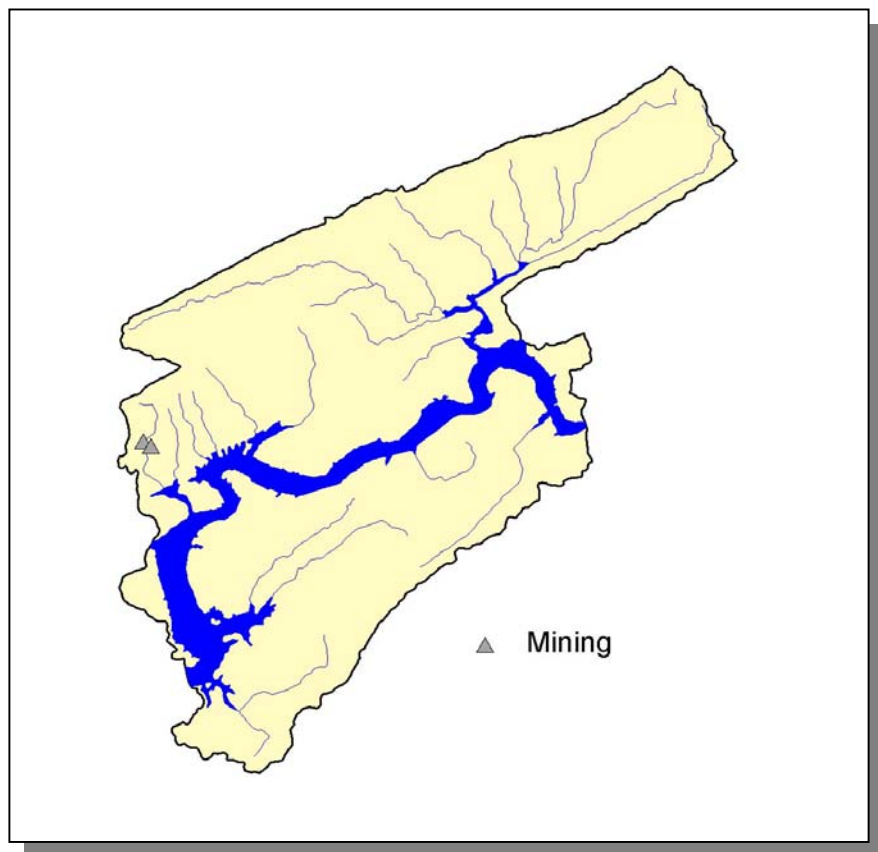


Figure 4-69. Location of Permits Issued in Subwatershed 060101040203. More information, including the names of facilities, is provided in Appendix IV.

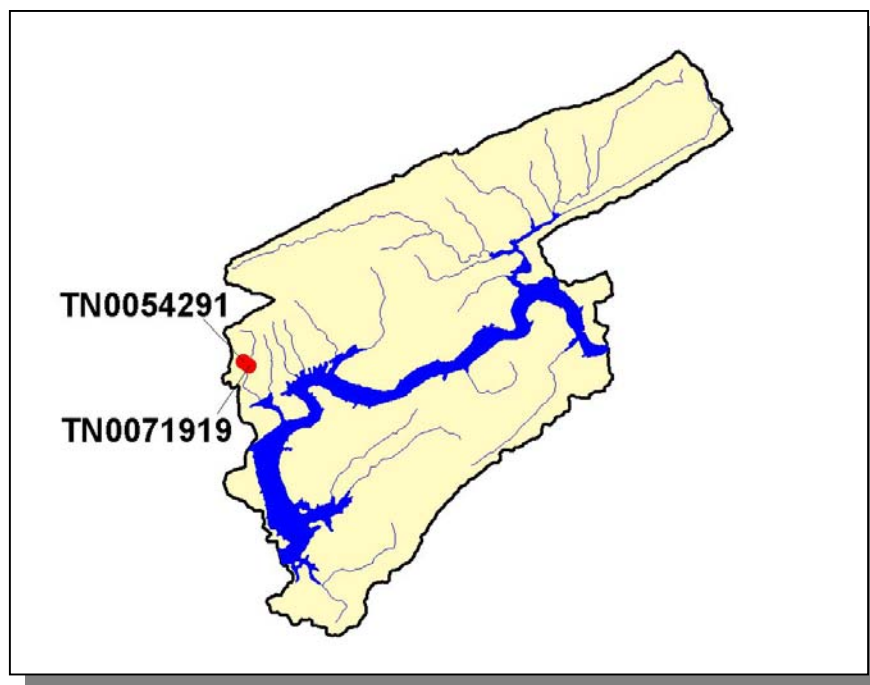


Figure 4-70. Location of Active Mining Sites in Subwatershed 060101040203. More information, including the names of mining operations, is provided in Appendix IV.

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4.2.B.iii.b. Nonpoint Source Contributions.

LIVESTOCK (COUNTS)						
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
2,081	4,034	101	7	1,095	49	27

Table 4-56. Summary of Livestock Count Estimates in Subwatershed 060101040203.

According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

LIVESTOCK COUNTS							
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
Greene	33,962	72,582	7,282	1,190	4,908,815	495	226
Hawkins	18,796	36,429	903	1,079	0	442	243

Table 4-57. Summary of Livestock Count Estimates in Greene and Hawkins Counties.

According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

County	INVENTORY		REMOVAL RATE	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Greene	180.0	171.8	2.0	10.5
Hawkins	177.4	177.4	0.4	2.1

Table 4-58. Forest Acreage and Annual Removal Rates (1987-1994) in Greene and Hawkins Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.27
Grass (Hayland)	0.54
Legumes, Grass (Hayland)	0.40
Legumes (Hayland)	0.16
Grass, Forbs, Legumes (Mixed Pasture)	0.53
Corn (Row Crops)	16.75
Tobacco (Row Crops)	16.35
Other Vegetable and Truck Crops	32.10
Farmsteads and Ranch Headquarters	0.46

Table 4-59. Annual Estimated Total Soil Loss in Subwatershed 060101040203.

4.2.B.iv. 060101040204 (Caney Creek).

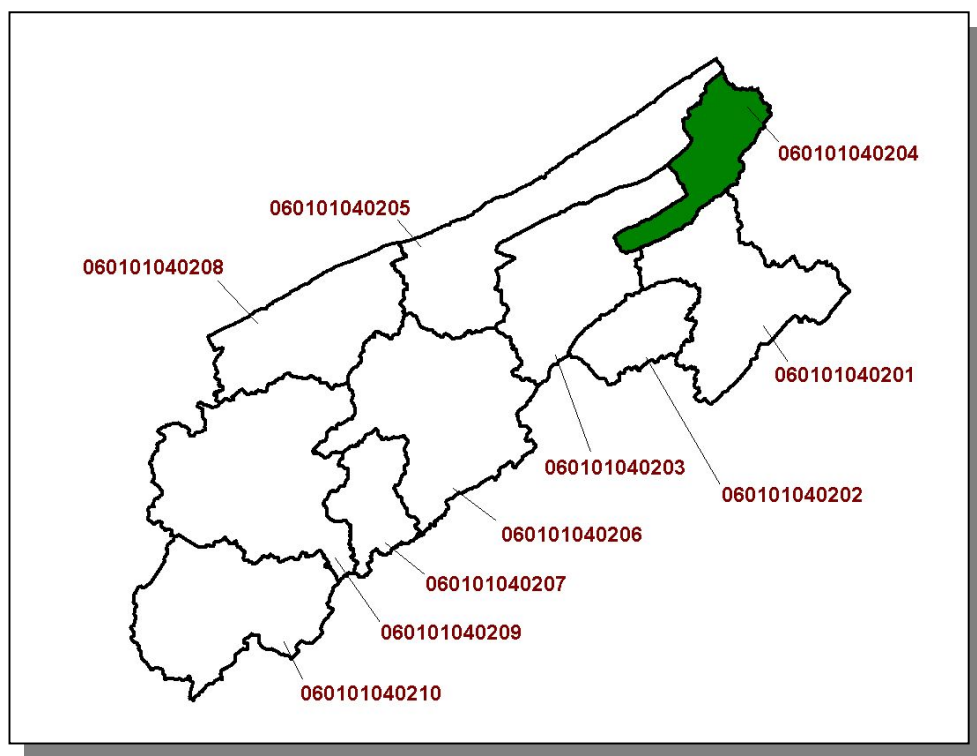


Figure 4-71. Location of Subwatershed 060101040204. All HUC-12 subwatershed boundaries are shown for reference.

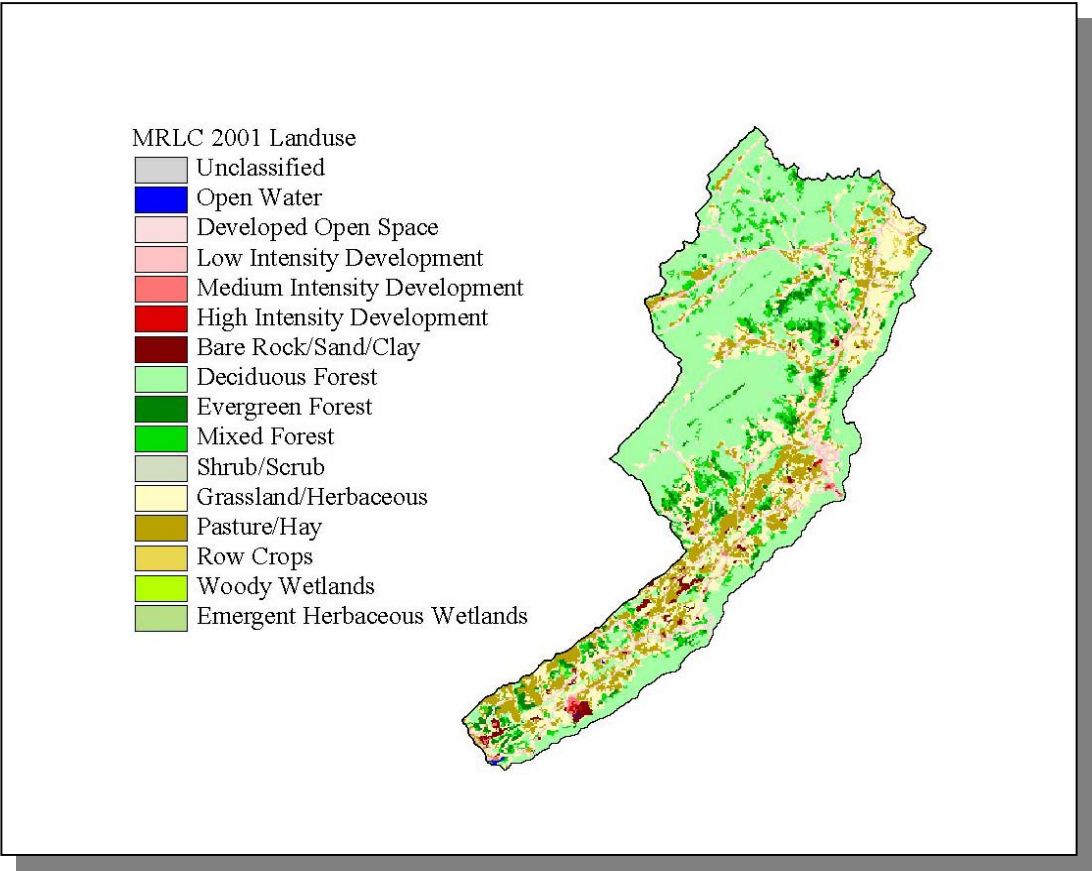


Figure 4-72. Illustration of Land Use Distribution in Subwatershed 060101040204.

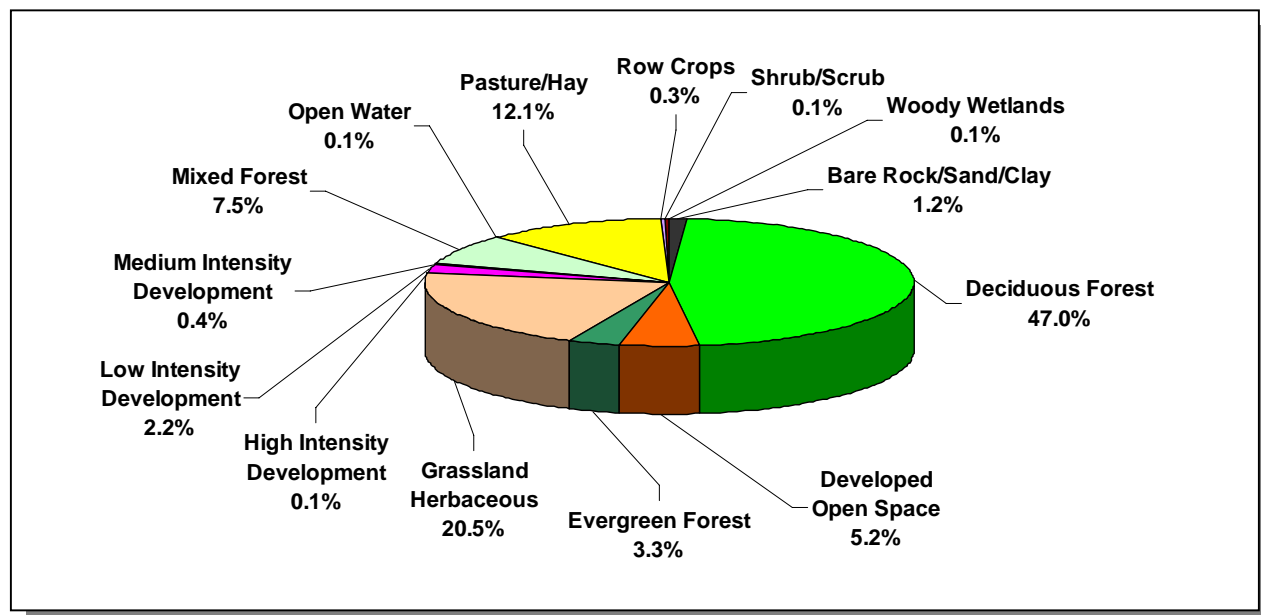


Figure 4-73. Land Use Distribution in Subwatershed 060101040204. More information is provided in Appendix IV.

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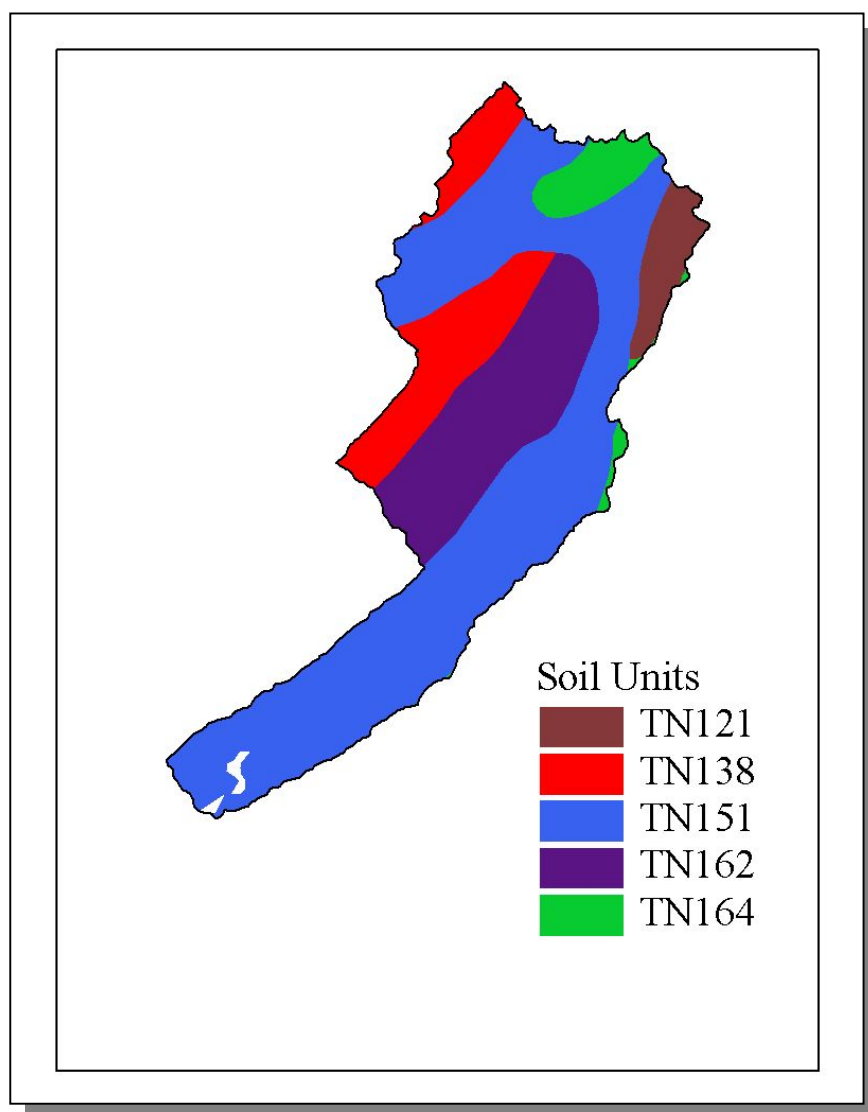


Figure 4-74. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040204.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN121	0.00	B	1.30	5.21	Loam	0.33
TN138	0.00	C	2.48	4.26	Sandy Loam	0.22
TN151	0.00	C	2.88	4.75	Loam	0.40
TN162	1.00	C	1.52	6.20	Loam	0.36
TN164	0.00	C	4.48	5.15	Loam	0.25

Table 4-60. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040204. The definition of "Hydrologic Group" is provided in Appendix IV.

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County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-2000)
	1990	1997	2000		1990	1997	2000	
Hawkins	44,565	48,821	53,563	4.53	2,017	2,210	2,425	20.2

Table 4-61. Population Estimates in Subwatershed 060101040204.

Populated Place	County	Population	NUMBER OF HOUSING UNITS			
			Total	Public Sewer	Septic Tank	Other
Rogersville	Hawkins	4,149	1,995	1,833	133	29

Table 4-62. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 060101040204.

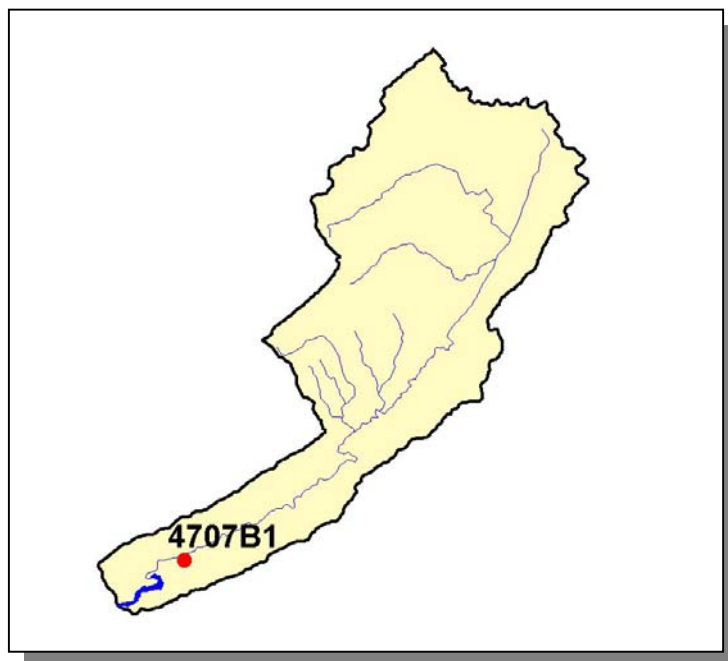


Figure 4-75. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 060101040204. More information, including site names and locations, is provided in Appendix IV.

4.2.B.iv.a. Point Source Contributions.

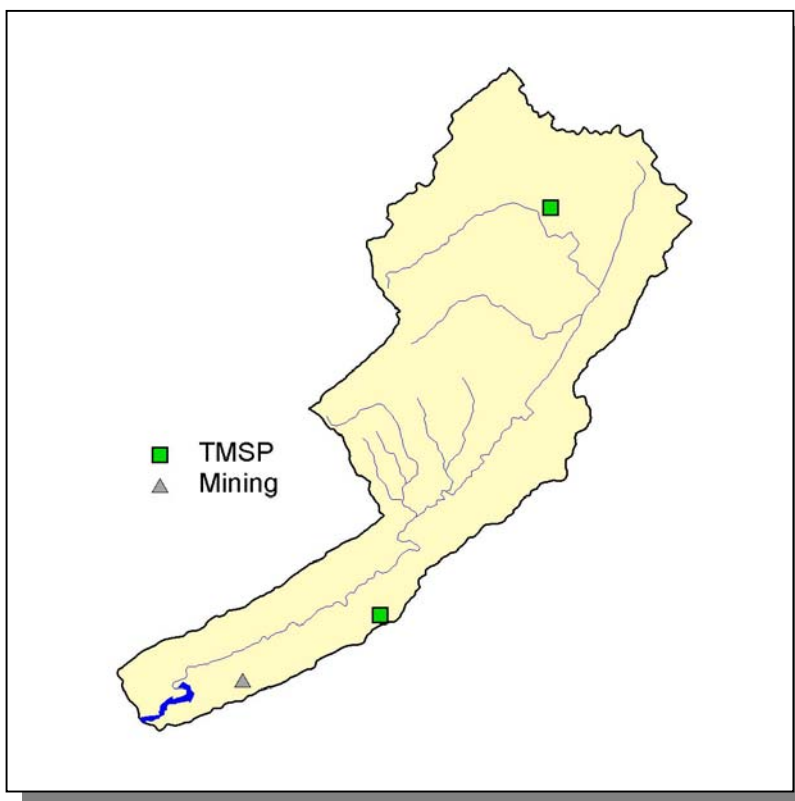


Figure 4-76. Location of Permits Issued in Subwatershed 060101040204. More information, including the names of facilities, is provided in Appendix IV.

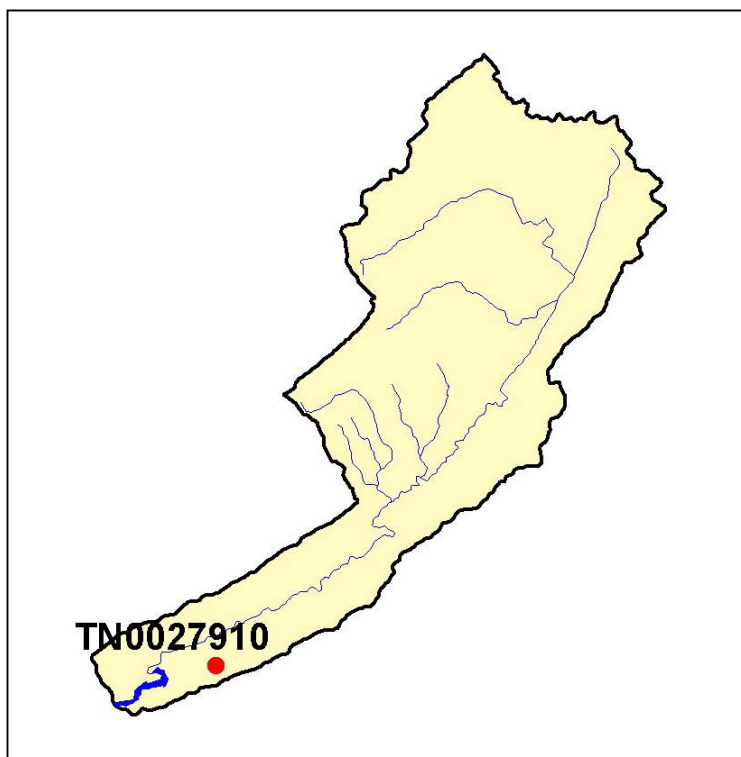


Figure 4-77. Location of Active Mining Sites in Subwatershed 060101040204. More information, including the names of mining operations, is provided in Appendix IV.

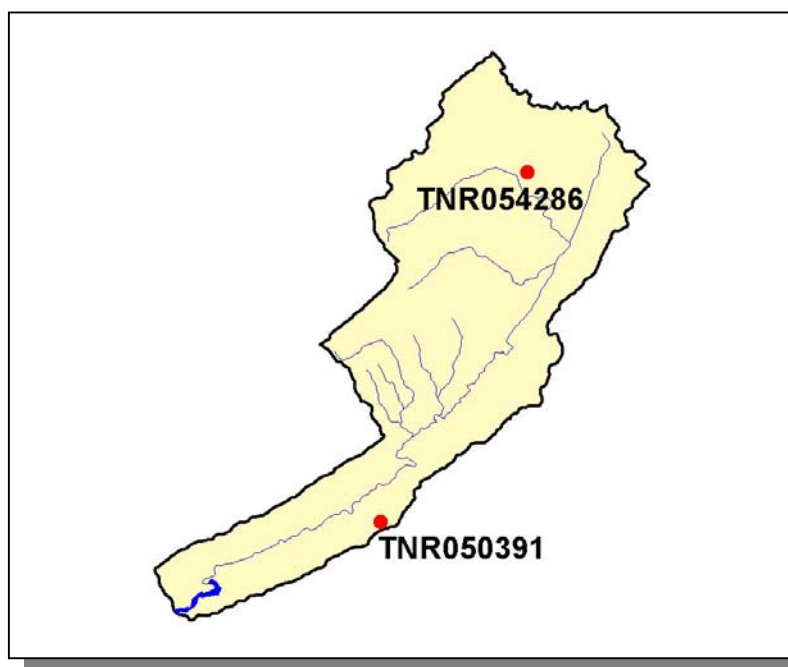


Figure 4-78. Location of TMSP Sites in Subwatershed 060101040204. More information, including the names of facilities, is provided in Appendix IV.

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4.2.B.iv.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
843	1,633	40	<5	20	11

Table 4-63. Summary of Livestock Count Estimates in Subwatershed 060101040204. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Hawkins	18,796	36,429	903	1,079	442	243

Table 4-64. Summary of Livestock Count Estimates in Hawkins County. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.

County	INVENTORY		REMOVAL RATE	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Hawkins	177.4	177.4	0.4	2.1

Table 4-65. Forest Acreage and Annual Removal Rates (1987-1994) in Hawkins County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.26
Grass (Hayland)	0.56
Legumes, Grass (Hayland)	0.40
Legumes (Hayland)	0.16
Grass, Forbs, Legumes (Mixed Pasture)	0.54
Tobacco (Row Crops)	16.40
Other Vegetable and Truck Crops	33.50
Farmsteads and Ranch Headquarters	0.40

Table 4-66. Annual Estimated Total Soil Loss in Subwatershed 060101040204.

4.2.B.v. 060101040205 (Poor Valley Creek).

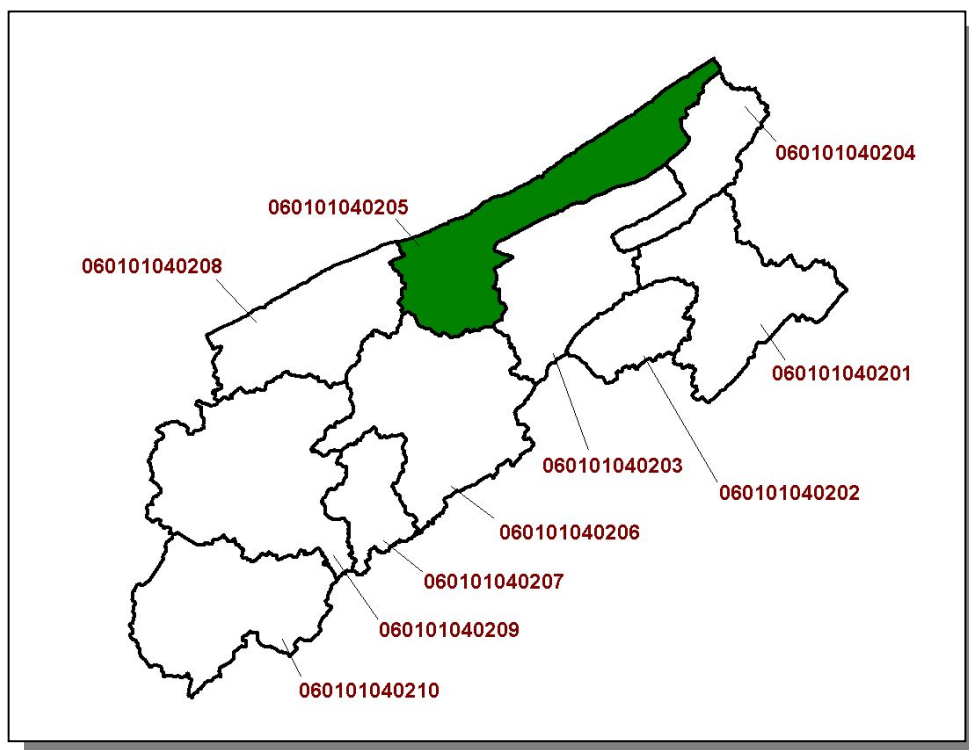


Figure 4-79. Location of Subwatershed 060101040205. All HUC-12 subwatershed boundaries are shown for reference.

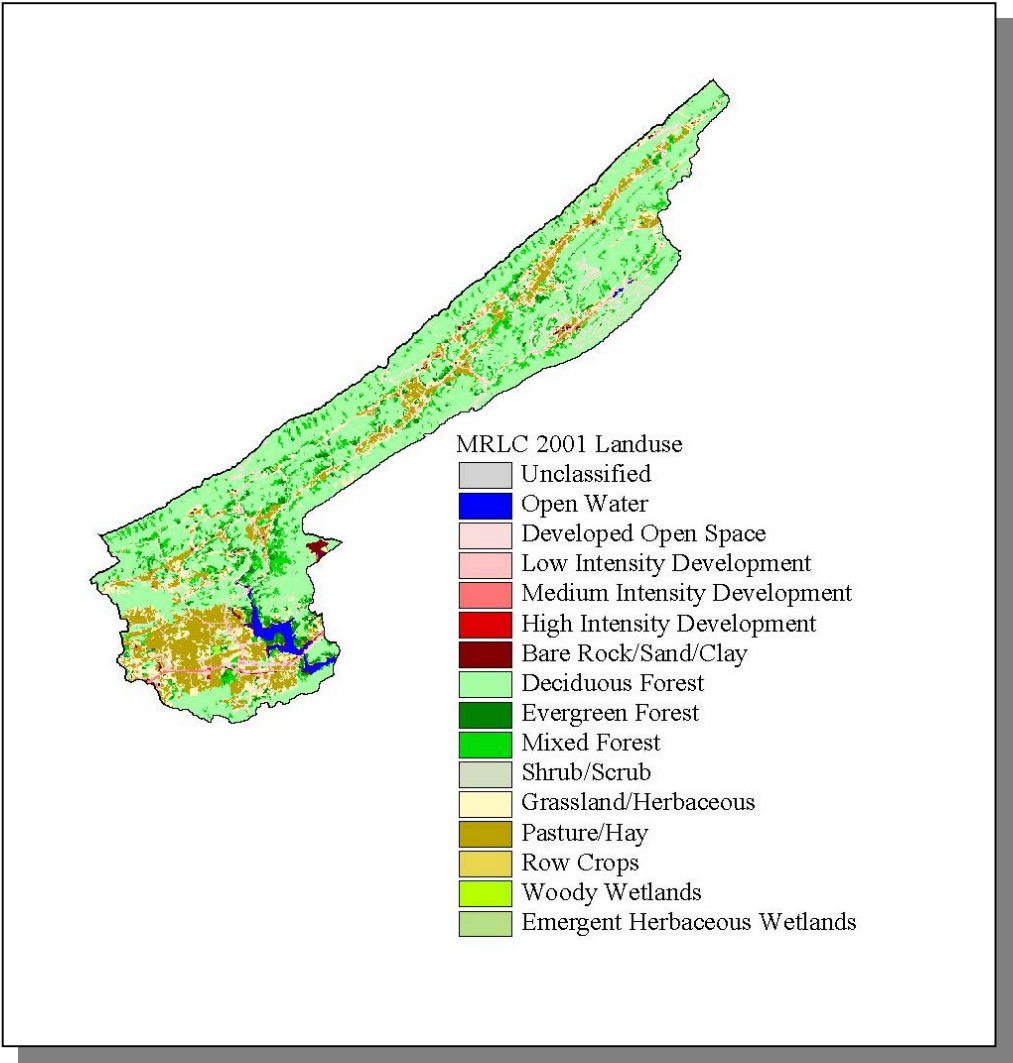


Figure 4-80. Illustration of Land Use Distribution in Subwatershed 060101040205.

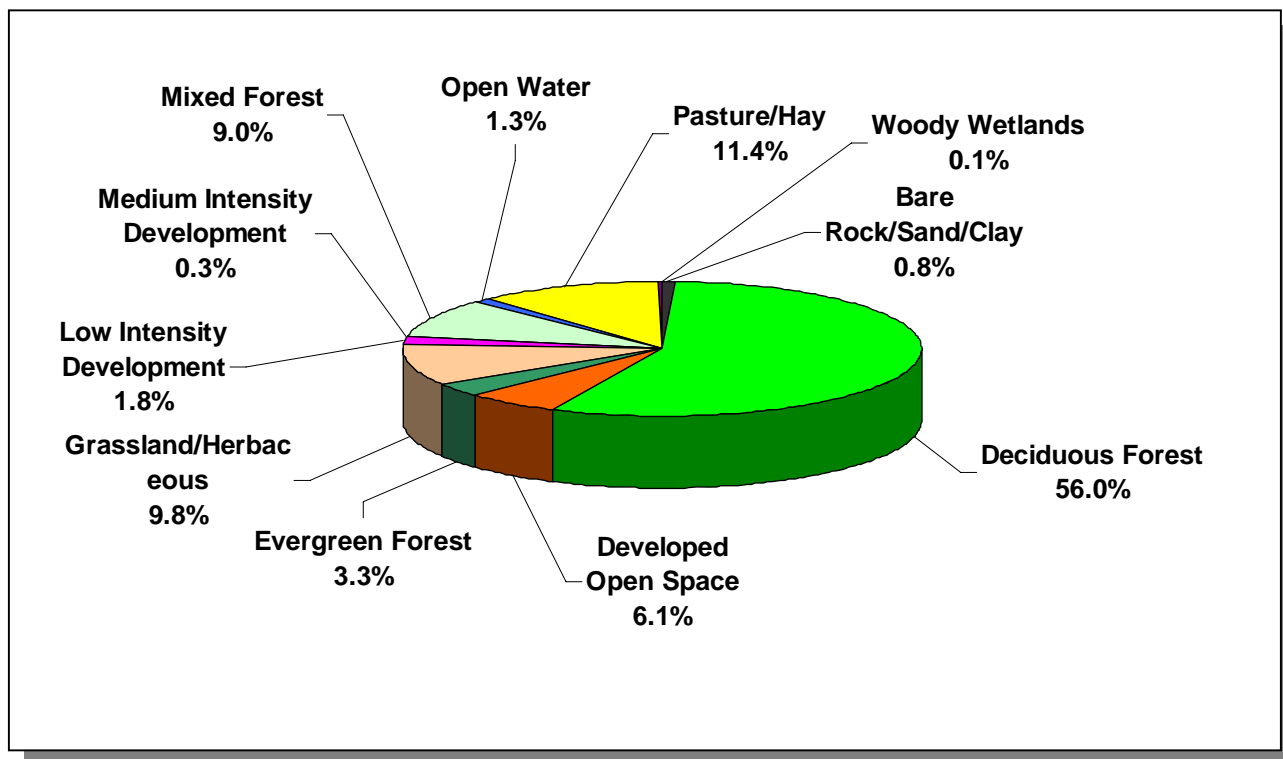


Figure 4-81. Land Use Distribution in Subwatershed 060101040205. More information is provided in Appendix IV.

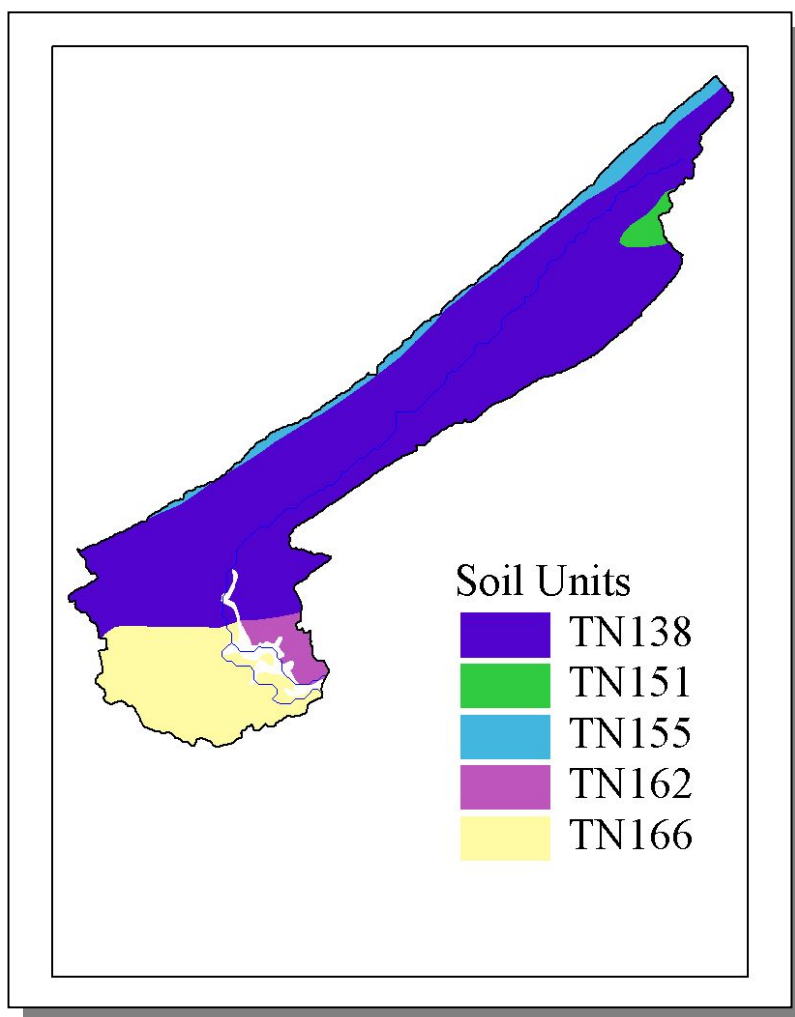


Figure 4-82. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040205.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN138	0.00	C	2.48	4.26	Sandy Loam	0.22
TN151	0.00	C	2.88	4.75	Loam	0.40
TN155	0.00	C	1.71	5.31	Loam	0.32
TN162	1.00	C	1.52	6.20	Loam	0.36
TN166	1.00	C	2.36	5.06	Loam	0.30

Table 4-67. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040205. The definition of "Hydrologic Group" is provided in Appendix IV.

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County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-2000)
	1990	1997	2000		1990	1997	2000	
Grainger	17,095	19,456	20,659	0.45	78	88	94	20.5
Hancock	6,739	6,801	6,786	0.09	6	6	6	0.0
Hawkins	44,565	48,821	53,563	10.44	4,653	5,098	5,593	20.2
Total	68,399	75,078	81,008		4,737	5,192	5,693	20.2

Table 4-68. Population Estimates in Subwatershed 060101040205.

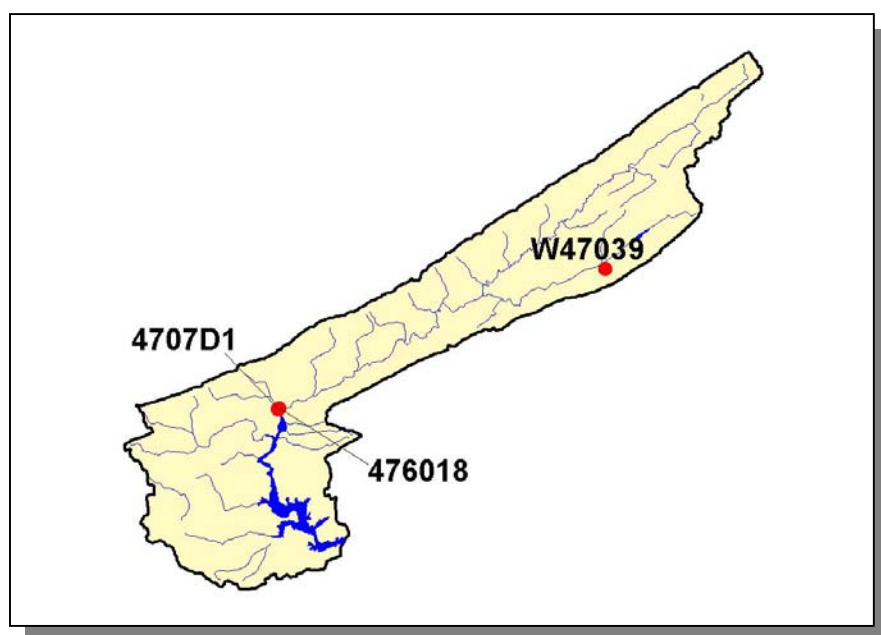


Figure 4-83. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 060101040205. More information, including site names and locations, is provided in Appendix IV.

4.2.B.v.a. Point Source Contributions.

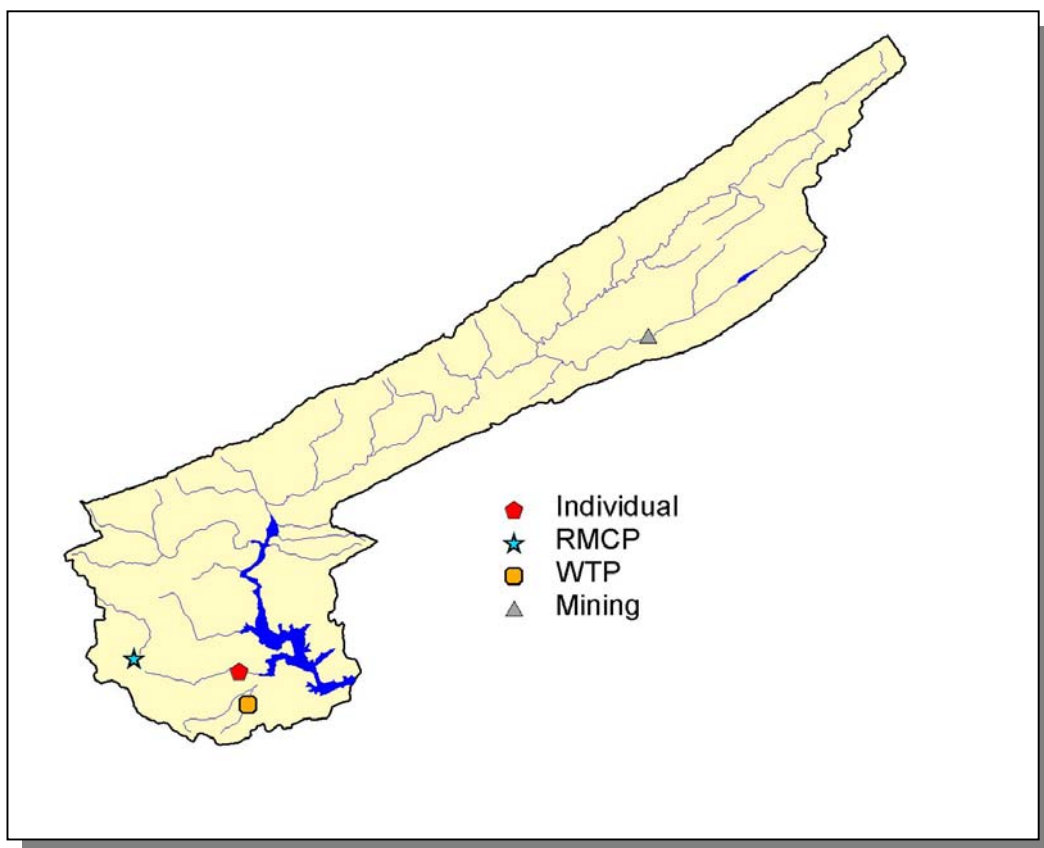


Figure 4-84. Location of Permits Issued in Subwatershed 060101040205. More information, including the names of facilities, is provided in Appendix IV.

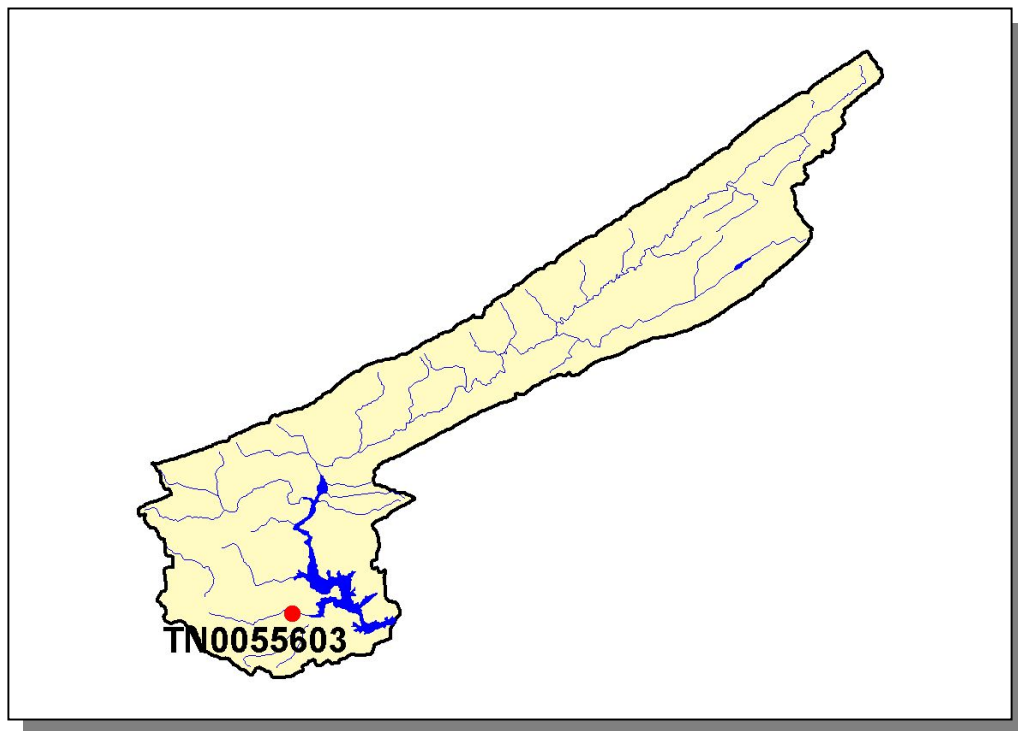


Figure 4-85. Location of Active NPDES Sites in Subwatershed 060101040205. More information, including the names of facilities, is provided in Appendix IV.

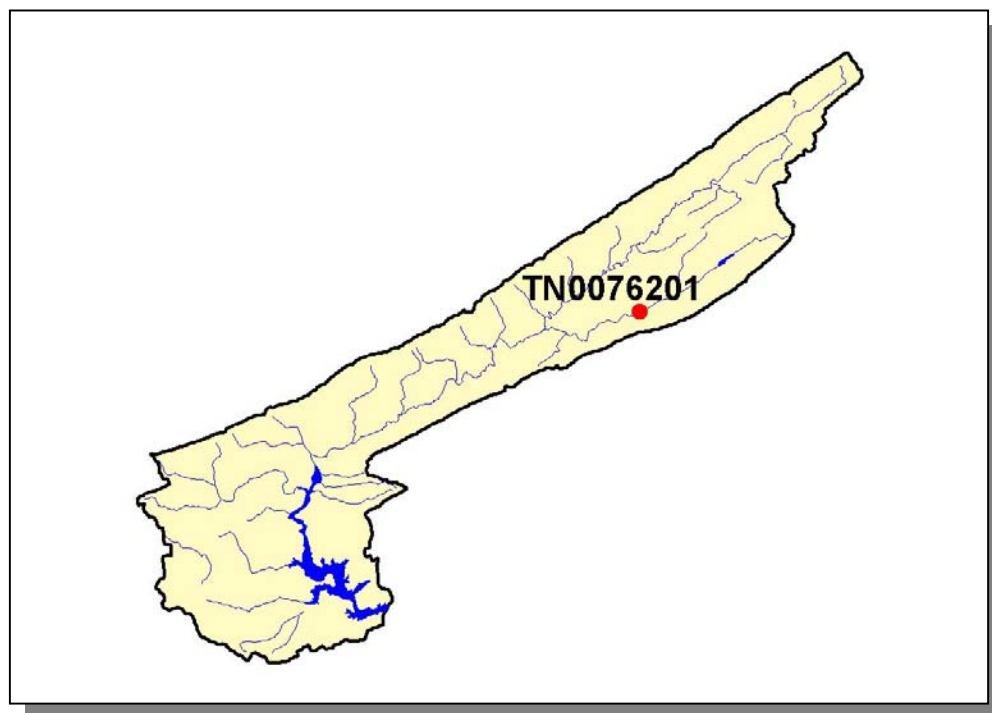


Figure 4-86. Location of Active Mining Sites in Subwatershed 060101040205. More information, including the names of mining operations, is provided in Appendix IV.

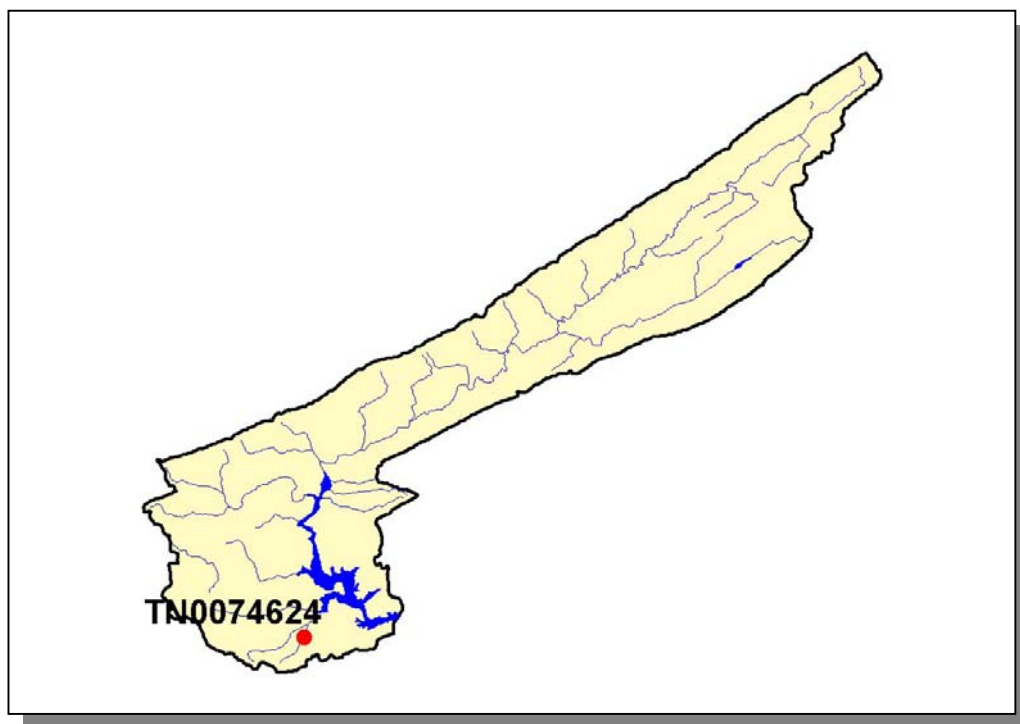


Figure 4-87. Location of Water Treatment Plants in Subwatershed 060101040205. More information, including the names of facilities, is provided in Appendix IV.

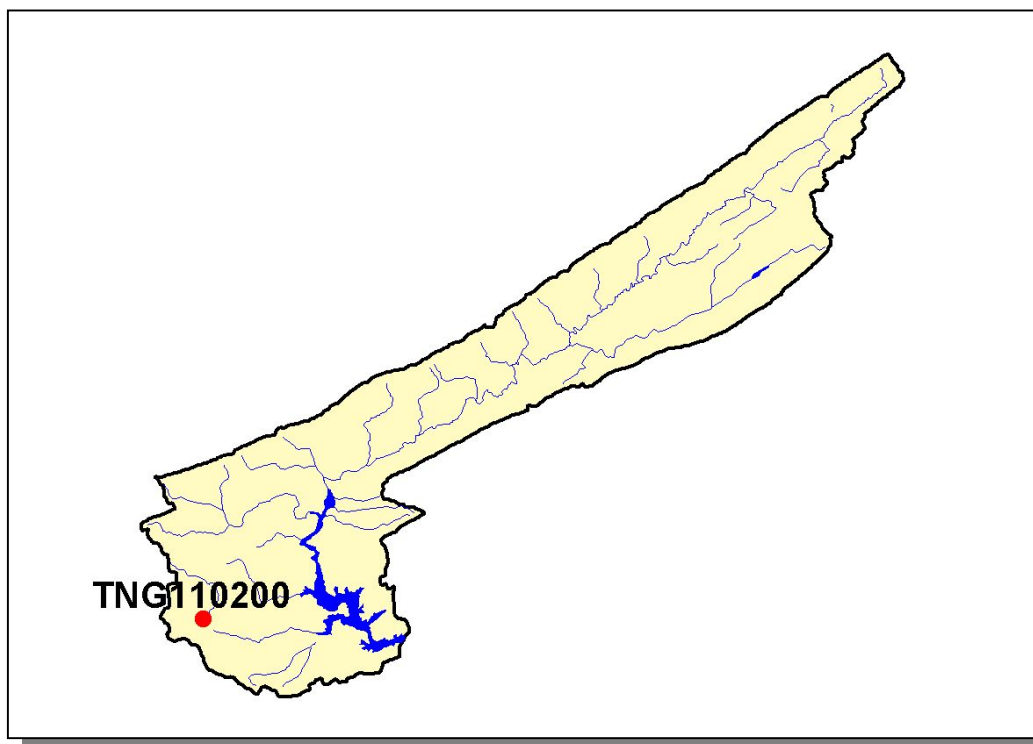


Figure 4-88. Location of Ready Mix Concrete Plants (RMCP) in Subwatershed 060101040205. More information is provided in Appendix IV.

4.2.B.v.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
1,367	2,652	68	<5	34	18

Table 4-69. Summary of Livestock Count Estimates in Subwatershed 060101040205. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Grainger	12,115	23,927	942	1,184	510	195
Hancock	7,079	14,311	89	364	0	67
Hawkins	18,796	36,429	903	1,079	442	243

Table 4-70. Summary of Livestock Count Estimates in Grainger, Hancock, and Hawkins Counties. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.

County	INVENTORY		REMOVAL RATE	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Grainger	102.6	102.6	0.3	1.8
Hancock	92.9	92.9	2.7	14.2
Hawkins	177.4	177.4	0.4	2.1

Table 4-71. Forest Acreage and Annual Removal Rates (1987-1994) in Grainger, Hancock, and Hawkins Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.29
Grass (Hayland)	0.55
Legumes, Grass (Hayland)	0.41
Legumes (Hayland)	0.16
Grass, Forbs, Legumes (Mixed Pasture)	0.55
Corn (Row Crops)	5.29
Tobacco (Row Crops)	16.18
Other Vegetable and Truck Crops	33.50
Farmsteads and Ranch Headquarters	0.41

Table 4-72. Annual Estimated Total Soil Loss in Subwatershed 060101040205.

4.2.B.vi. 060101040206 (Cherokee Lake).

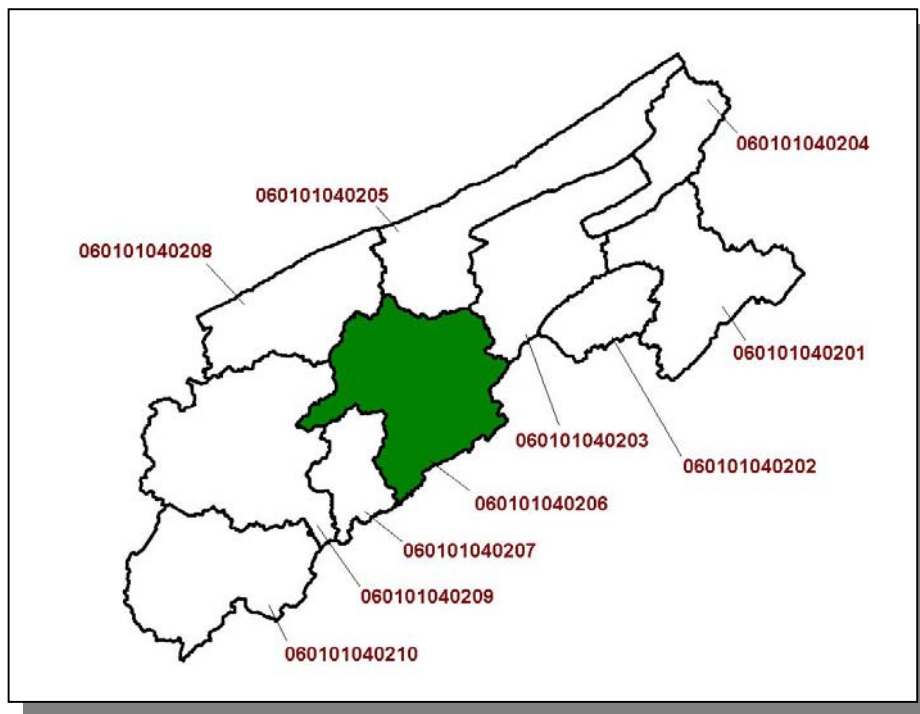


Figure 4-89. Location of Subwatershed 060101040206. All HUC-12 subwatershed boundaries are shown for reference.

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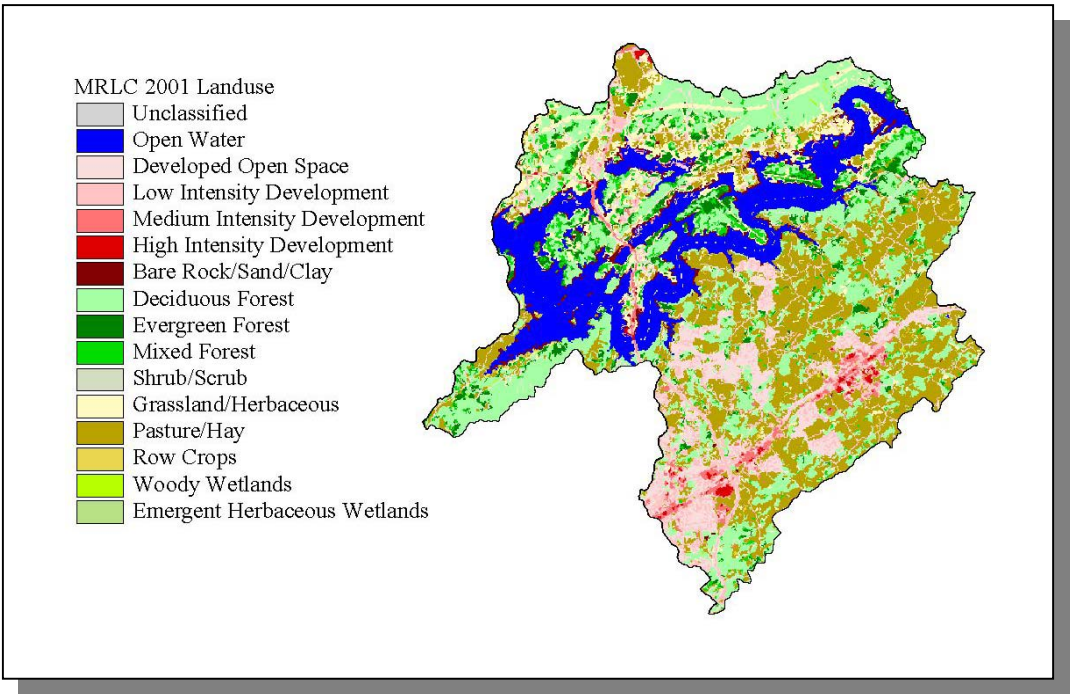


Figure 4-90. Illustration of Land Use Distribution in Subwatershed 060101040206.

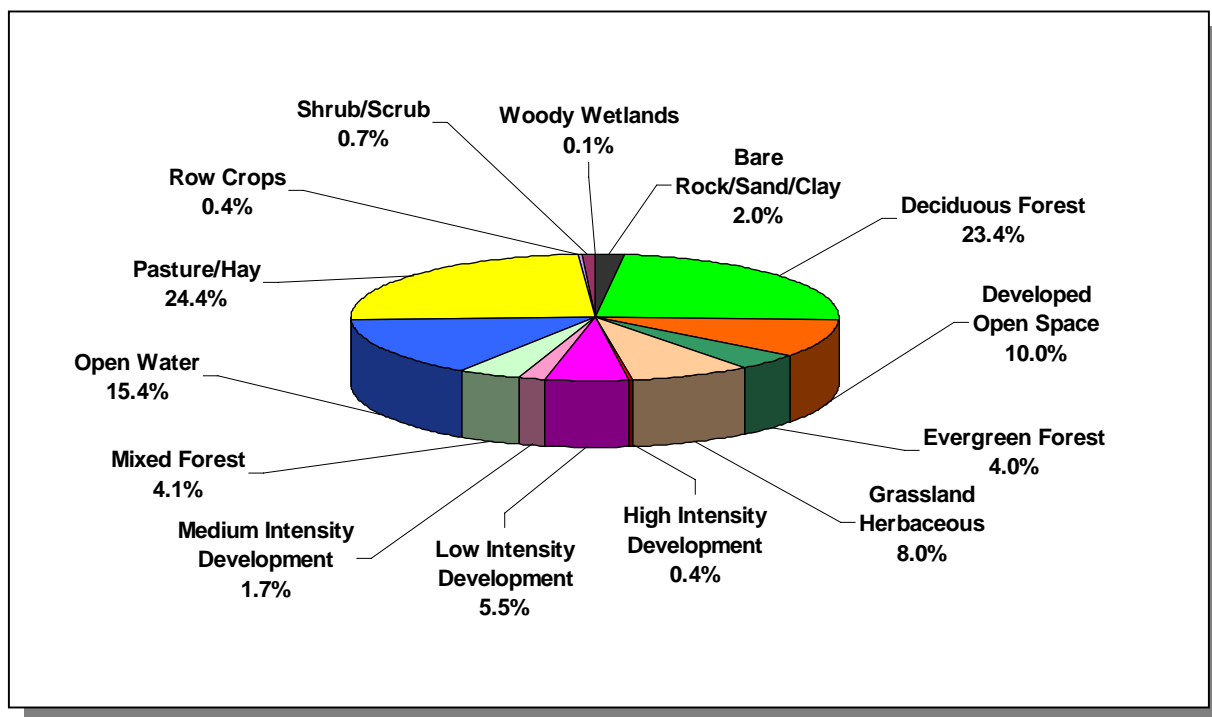


Figure 4-91. Land Use Distribution in Subwatershed 060101040206. More information is provided in Appendix IV.

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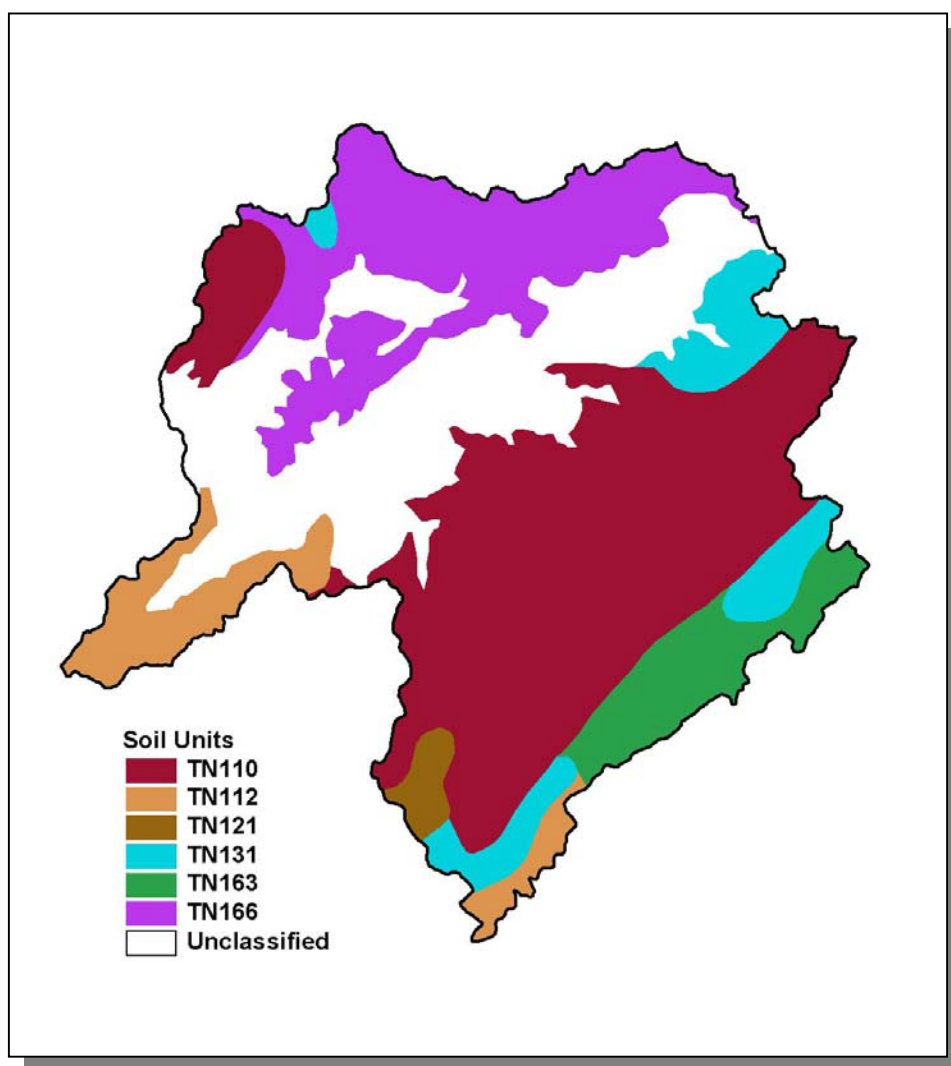


Figure 4-92. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040206.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN110	0.00	B	2.22	4.96	Loam	0.31
TN112	6.00	C	2.36	5.09	Loam	0.35
TN121	0.00	B	1.30	5.21	Loam	0.33
TN131	0.00	C	1.17	4.95	Silty Loam	0.33
TN163	0.00	B	1.37	5.15	Loam	0.31
TN166	1.00	C	2.36	5.06	Loam	0.30

Table 4-73. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040206. The definition of "Hydrologic Group" is provided in Appendix IV.

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County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-2000)
	1990	1997	2000		1990	1997	2000	
Grainger	17,095	19,456	20,659	4.08	698	794	844	20.9
Hamblen	50,480	53,699	58,128	21.88	11,045	11,749	12,718	15.1
Hawkins	44,565	48,821	53,563	2.05	913	1,000	1,097	20.2
Total	112,140	121,976	132,350		12,656	13,543	14,659	15.8

Table 4-74. Population Estimates in Subwatershed 060101040206.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Morristown	Hamblen	21,385	9,248	8,768	466	14

Table 4-75. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 060101040206.

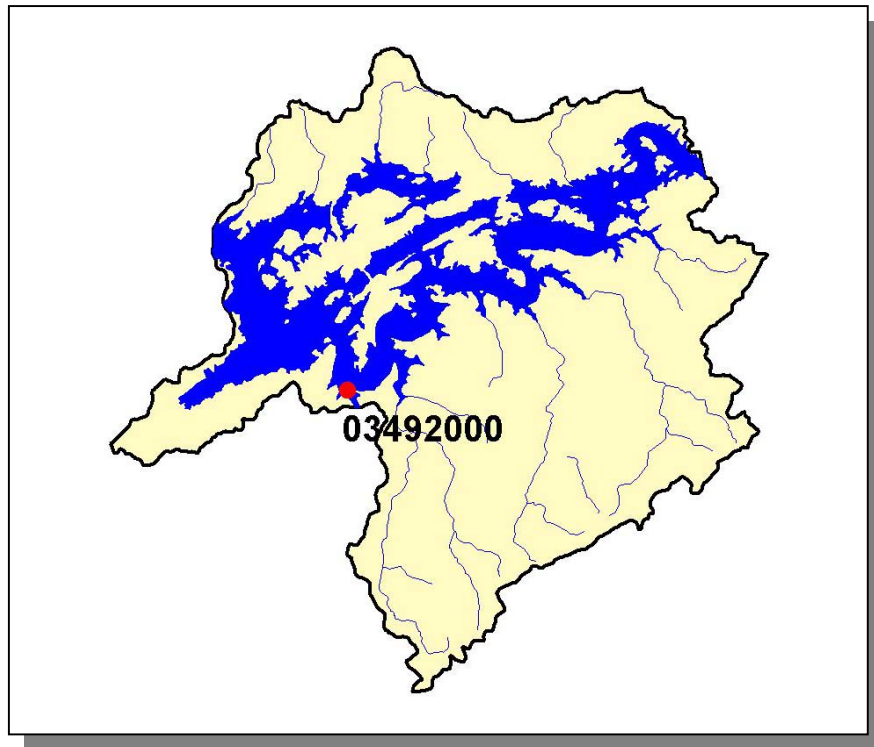


Figure 4-93. Location of Historical Streamflow Data Collection Sites in Subwatershed 060101040206. More information is provided in Appendix IV.

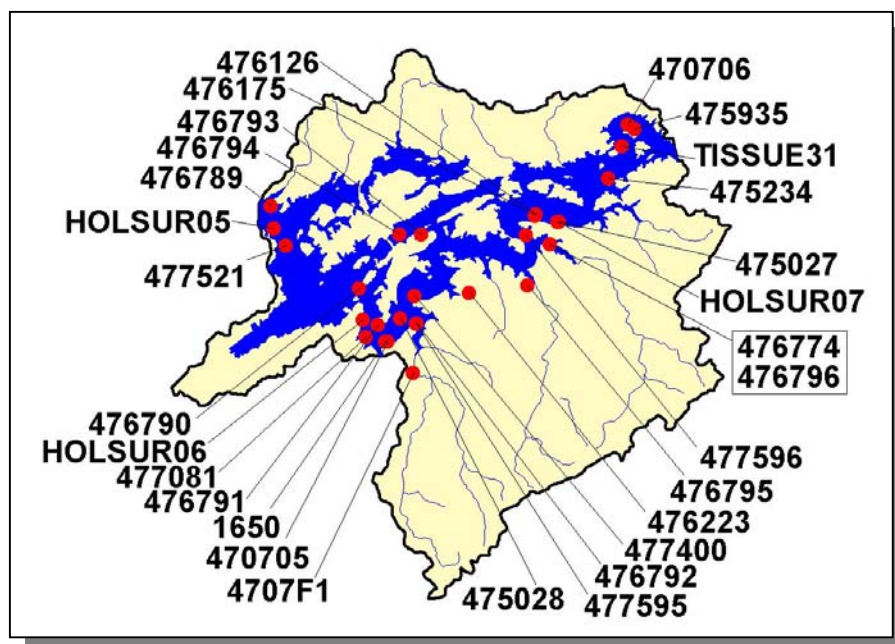


Figure 4-94. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 060101040206. More information, including site names and locations, is provided in Appendix IV.

4.2.B.vi.a. Point Source Contributions.

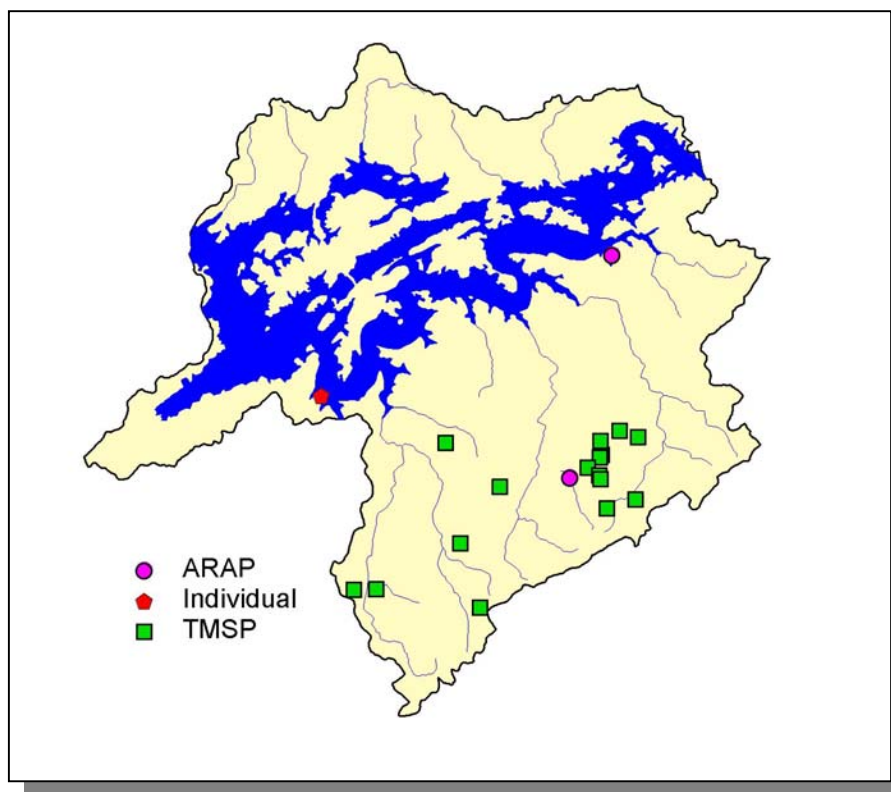


Figure 4-95. Location of Permits Issued in Subwatershed 060101040206. More information, including the names of facilities, is provided in Appendix IV.

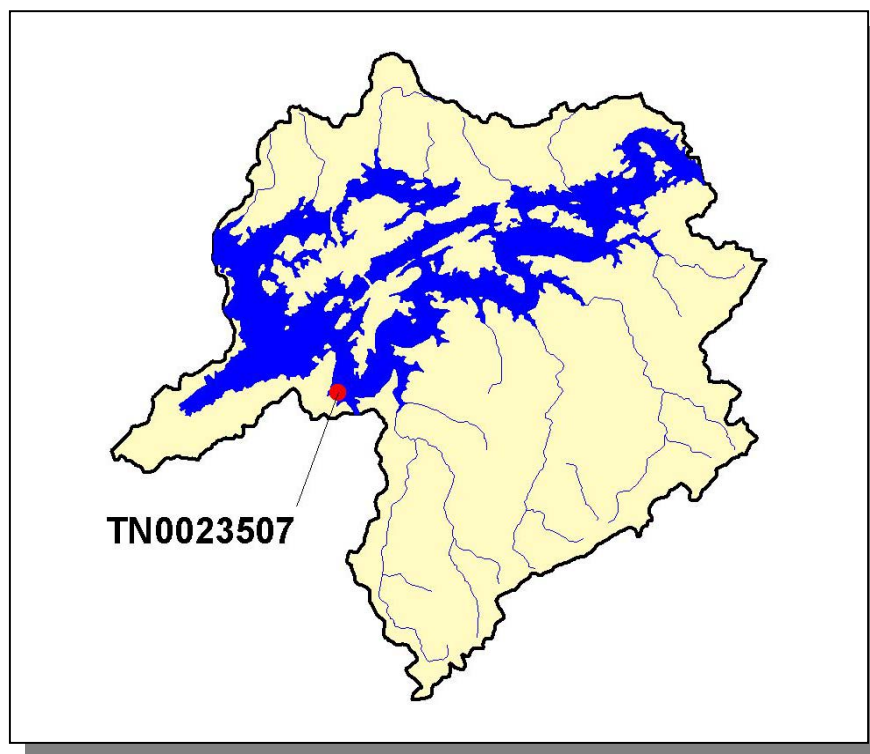


Figure 4-96. Location of Active NPDES Sites in Subwatershed 060101040206. More information, including the names of facilities, is provided in Appendix IV.

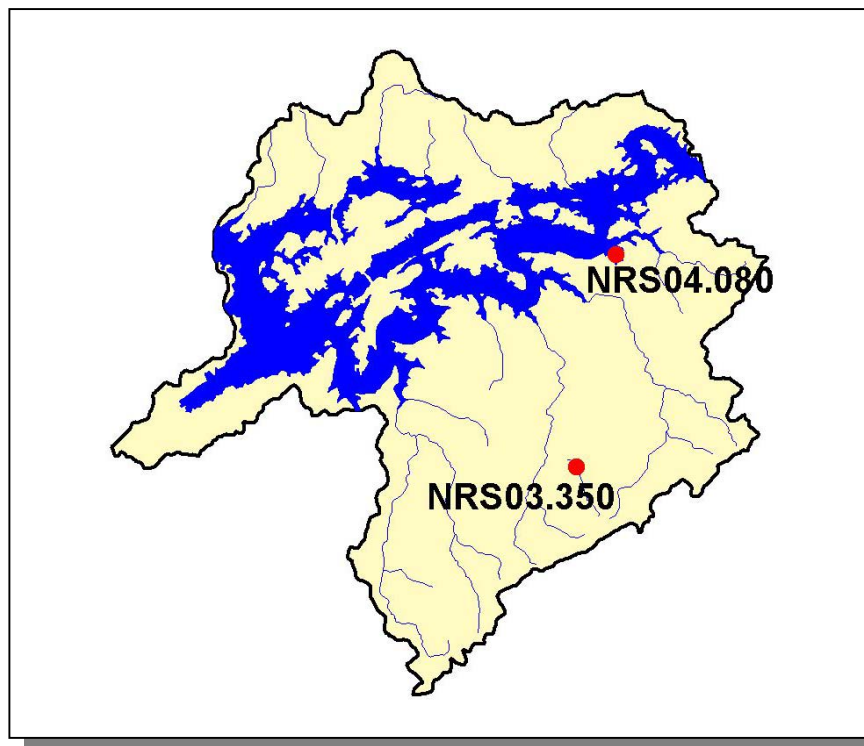


Figure 4-97. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 060101040206. More information is provided in Appendix IV.

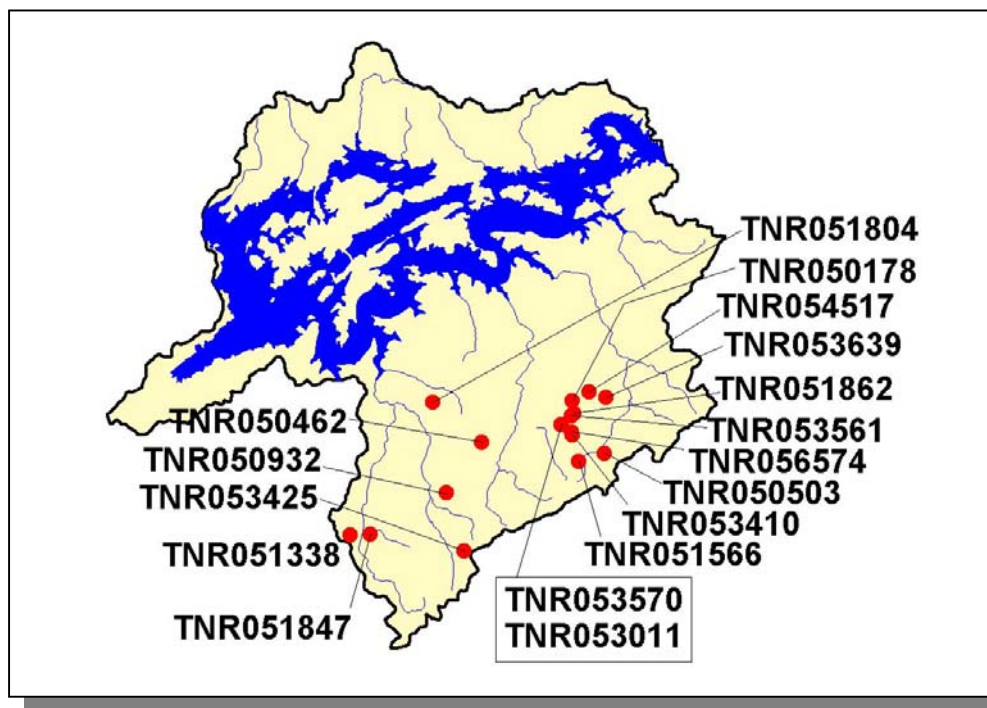


Figure 4-98. Location of TMSF Sites in Subwatershed 060101040206. More information, including the names of facilities, is provided in Appendix IV.

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4.2.B.vi.b. Nonpoint Source Contributions.

LIVESTOCK (COUNTS)						
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
2,124	4,065	243	4	331,502	240	76

Table 4-76. Summary of Livestock Count Estimates in Subwatershed 060101040206. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

LIVESTOCK COUNTS							
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
Grainger	12,115	23,927	942	1,184	0	510	195
Hamblen	8,620	16,376	1,129	233	1,776,000	1,195	367
Hawkins	18,796	36,429	903	1,079	0	442	243

Table 4-77. Summary of Livestock Count Estimates in Grainger, Hamblen, and Hawkins Counties. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

County	INVENTORY		REMOVAL RATE	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Grainger	102.6	102.6	0.3	1.8
Hamblen	32.8	32.8	0.0	0.0
Hawkins	177.4	177.4	0.4	2.1

Table 4-78. Forest Acreage and Annual Removal Rates (1987-1994) in Grainger, Hamblen, and Hawkins Counties.

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CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.61
Grass (Hayland)	0.39
Legumes, Grass (Hayland)	0.28
Legumes (Hayland)	0.16
Grass, Forbs, Legumes (Mixed Pasture)	0.45
Corn (Row Crops)	12.64
Tobacco (Row Crops)	9.51
Other Vegetable and Truck Crops	33.50
Aquaculture in a Crop Rotation	0.15
Other Land in Farms	0.21
Farmsteads and Ranch Headquarters	0.26

Table 4-79. Annual Estimated Total Soil Loss in Subwatershed 060101040206.

4.2.B.vii. 060101040207 Turkey Creek).

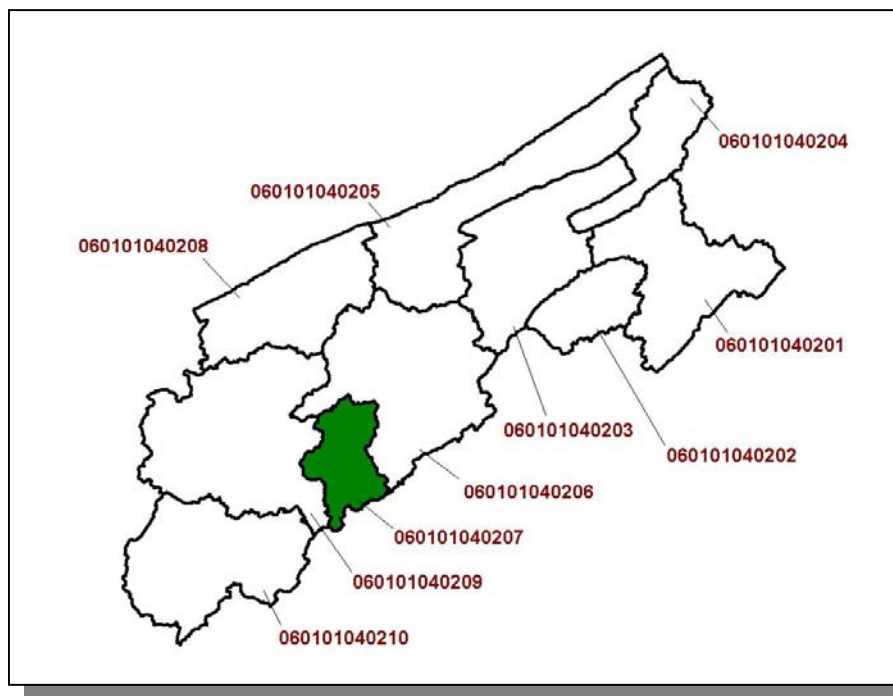


Figure 4-99. Location of Subwatershed 060101040207. All HUC-12 subwatershed boundaries are shown for reference.

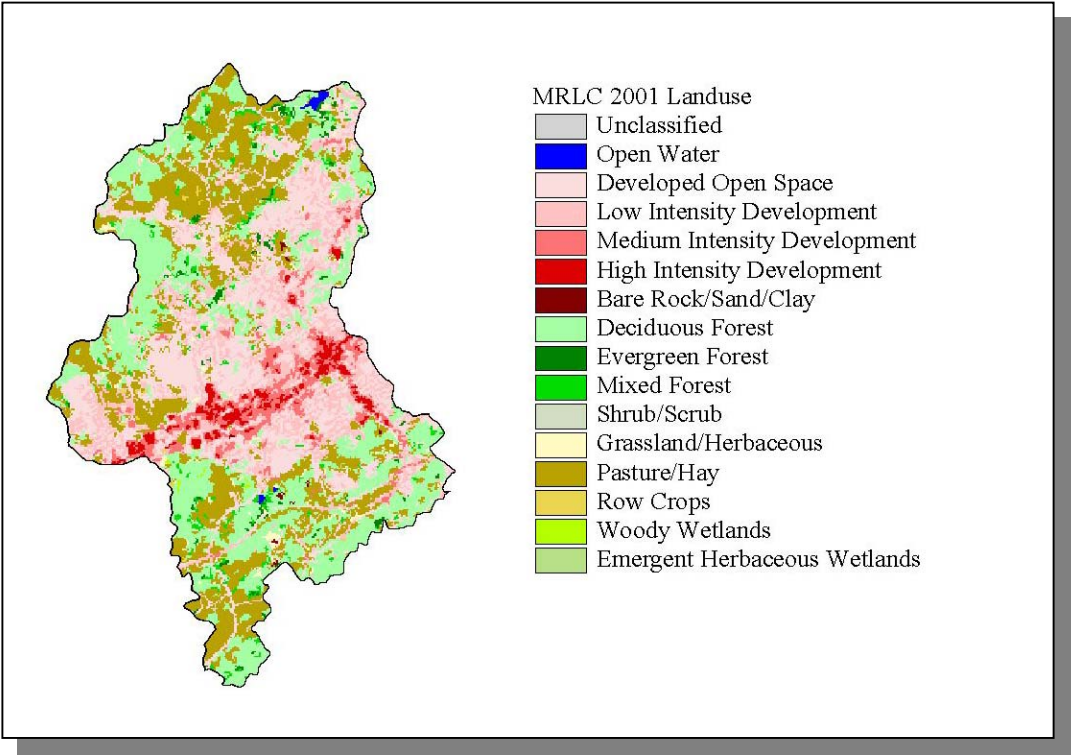


Figure 4-100. Illustration of Land Use Distribution in Subwatershed 060101040207.

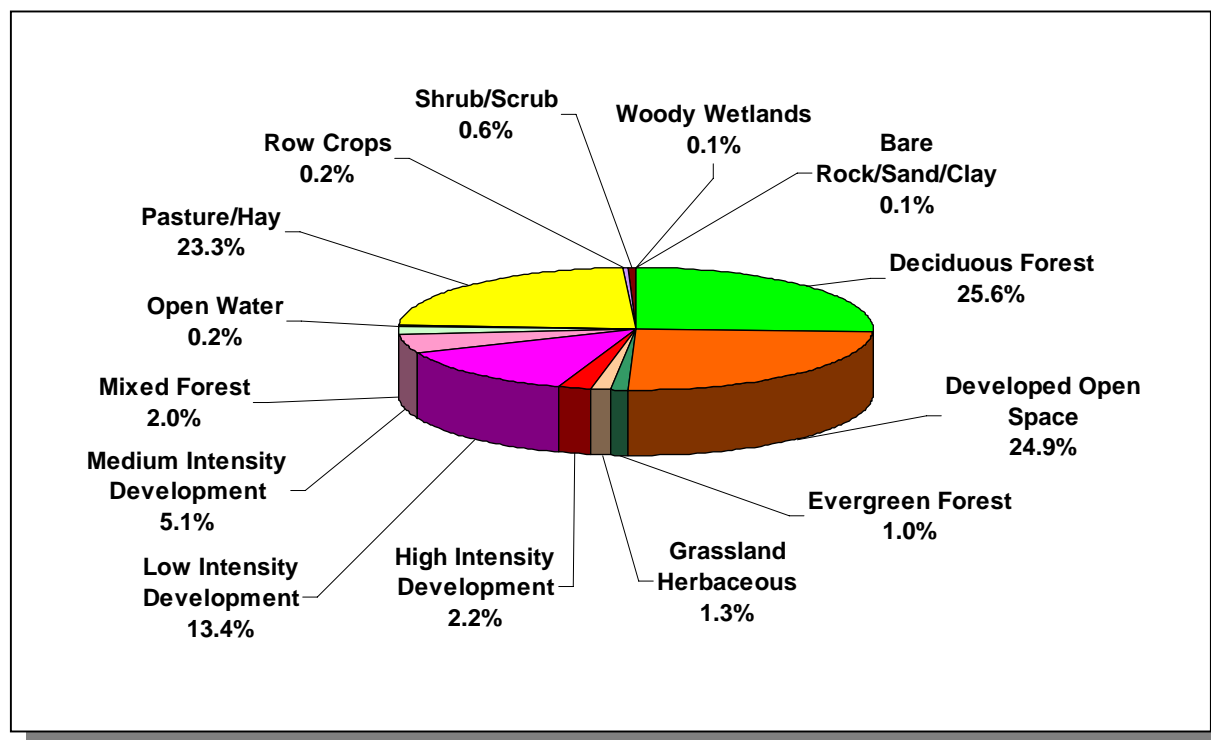


Figure 4-101. Land Use Distribution in Subwatershed 060101040207. More information is provided in Appendix IV.

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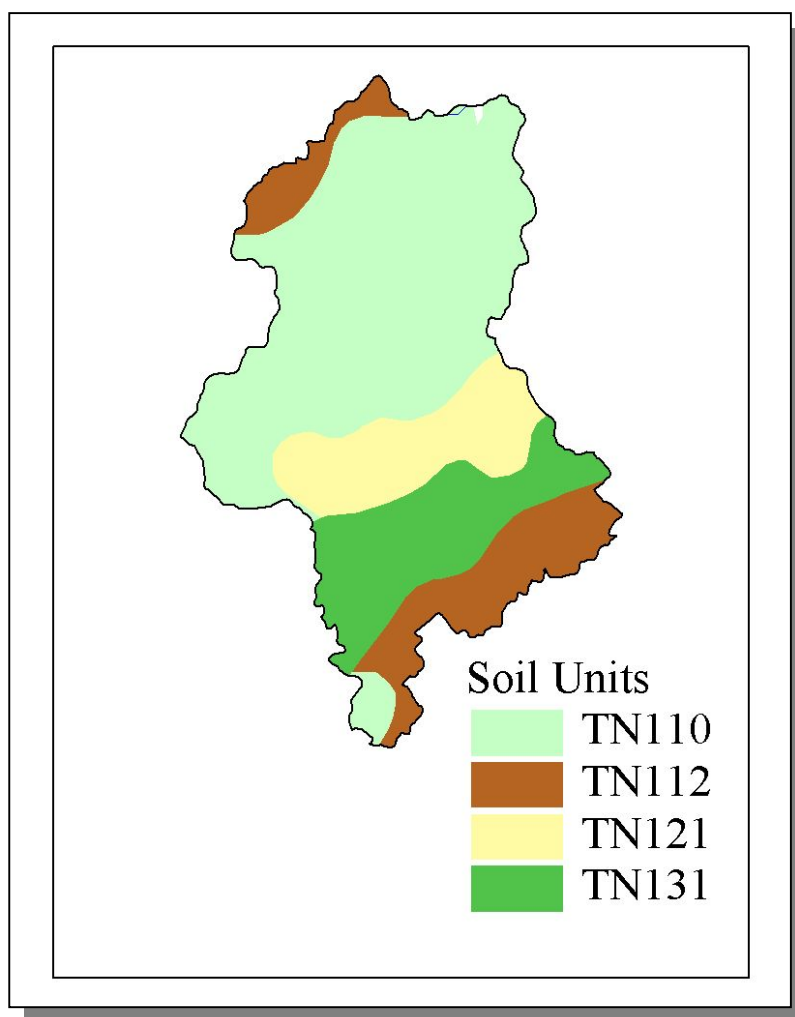


Figure 4-102. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040207.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN110	0.00	B	2.22	4.96	Loam	0.31
TN112	6.00	C	2.36	5.09	Loam	0.35
TN121	0.00	B	1.30	5.21	Loam	0.33
TN131	0.00	C	1.17	4.95	Silty Loam	0.33

Table 4-80. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040207. The definition of "Hydrologic Group" is provided in Appendix IV.

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County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-2000)
	1990	1997	2000		1990	1997	2000	
Hamblen	50,480	53,699	58,128	10.49	5,295	5,633	6,098	15.2

Table 4-81. Population Estimates in Subwatershed 060101040207.

Populated Place	County	Population	NUMBER OF HOUSING UNITS			
			Total	Public Sewer	Septic Tank	Other
Morristown	Hamblen	21,385	9,248	8,768	466	14

Table 4-82. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 060101040207.

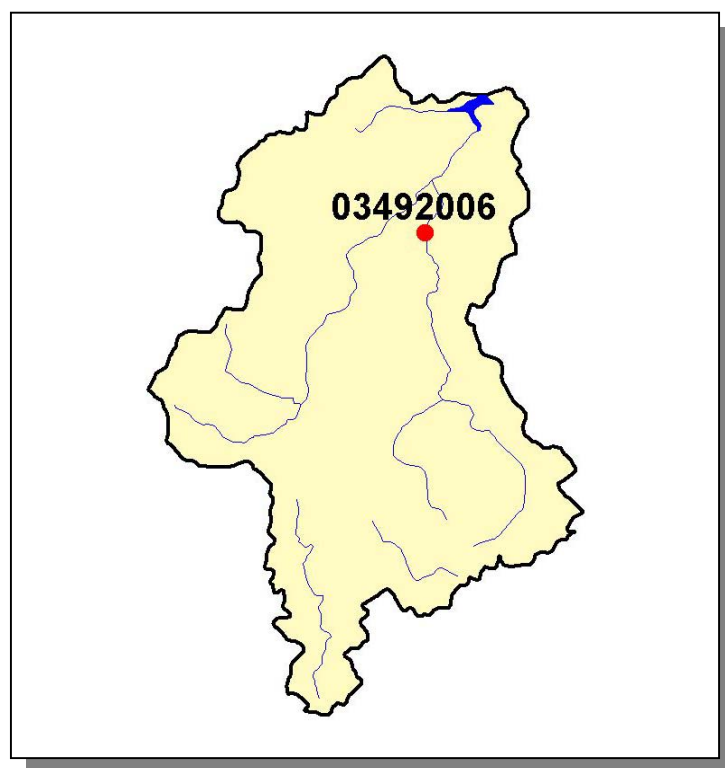


Figure 4-103. Location of Historical Streamflow Data Collection Sites in Subwatershed 060101040207. More information is provided in Appendix IV.

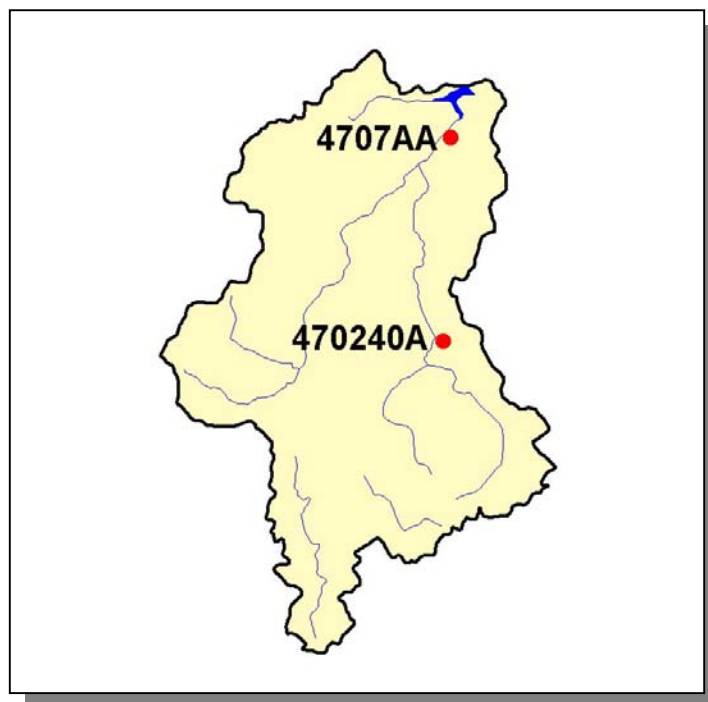


Figure 4-104. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 060101040207. More information, including site names and locations, is provided in Appendix IV.

4.2.B.vii.a. Point Source Contributions.

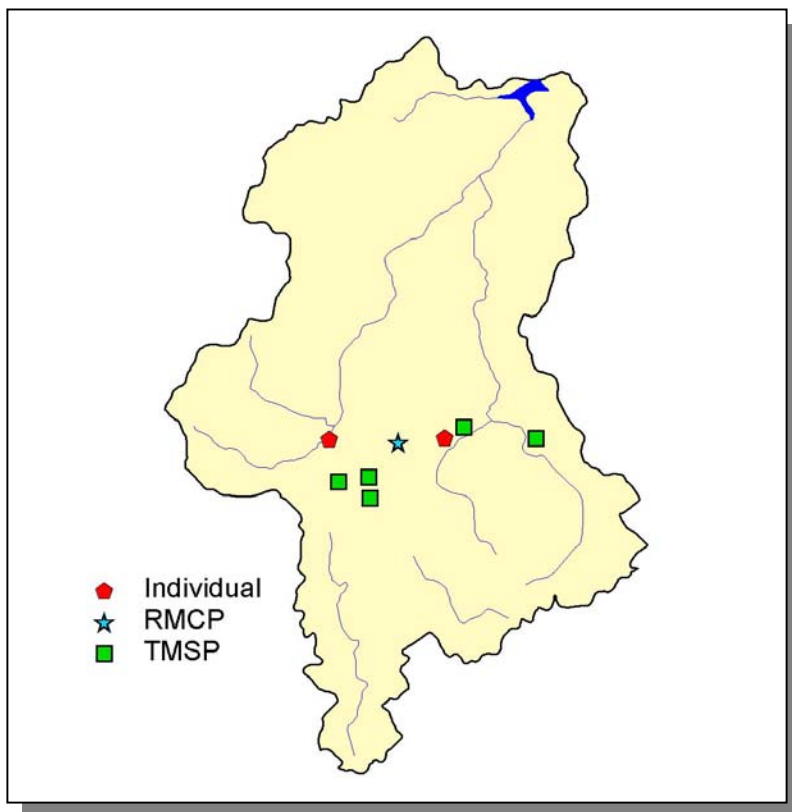


Figure 4-105. Location of Permits Issued in Subwatershed 060101040207. More information, including the names of facilities, is provided in Appendix IV.

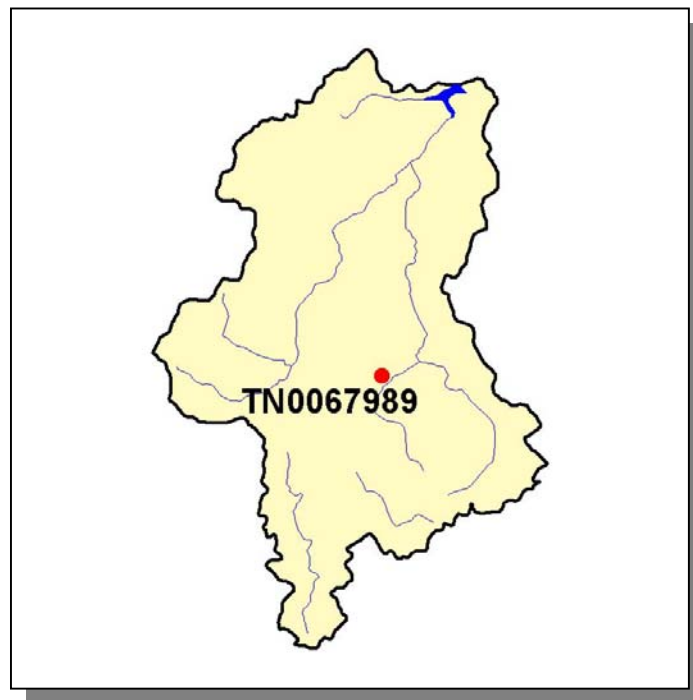


Figure 4-106. Location of Active NPDES Sites in Subwatershed 060101040207. More information, including the names of facilities, is provided in Appendix IV.



Figure 4-107. Location of Ready Mix Concrete Plants (RMCP) in Subwatershed 060101040207. More information is provided in Appendix IV.

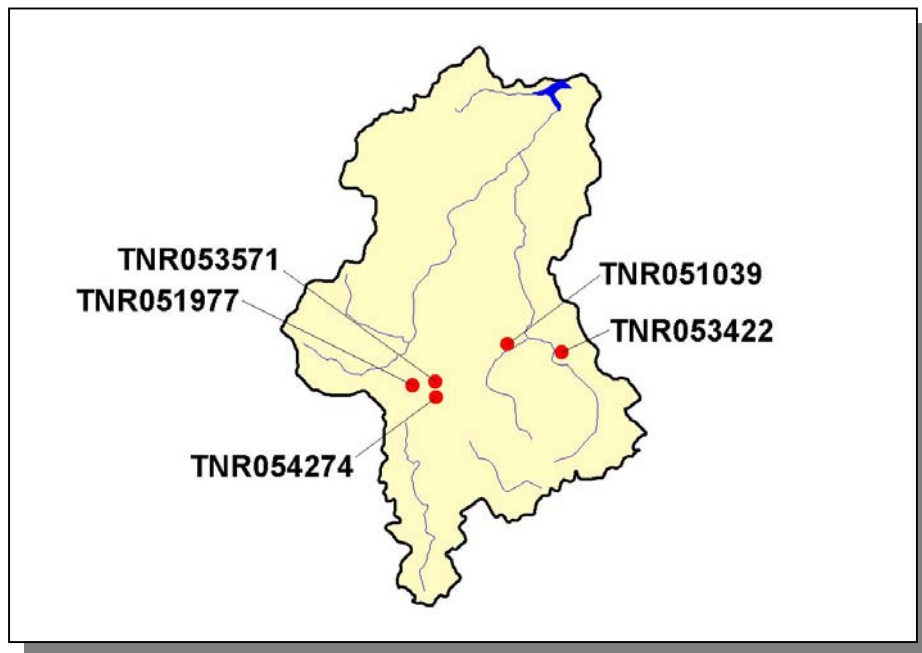


Figure 4-108. Location of TMSP Sites in Subwatershed 060101040207. More information, including the names of facilities, is provided in Appendix IV.

4.2.B.vii.a.i. Dischargers to Water Bodies Listed on the 2004 303(d) List

There is one NPDES facility discharging to water bodies listed on the 2004 303(d) list in Subwatershed 060101040207:

- TN0067989 (Koch Foods, LLC) discharges to West Fork Turkey Creek @ RM 0.1

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Figure 4-109. Location of NPDES Dischargers to Water Bodies Listed on the 2004 303(d) List in Subwatershed 060101040207. More information, including the names of facilities, is provided in Appendix IV.

PERMIT #	1Q10	3Q10	7Q10	3Q20	QDESIGN
TN0067989					

Table 4-83. Receiving Stream Flow Information for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 060101040207. Data are in million gallons per day (MGD). Data were obtained from the USGS publication Flow Duration and Low Flows of Tennessee Streams Through 1992 or from permit files.

PERMIT #	FLOW
TN0067989	X

Table 4-84. Monitoring Requirements for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 060101040207.

PERMIT #	CBOD ₅	NH ₃	NO ₃	TSS	OIL AND GREASE	DO	pH
TN0067989	X	X	X	X	X	X	X

Table 4-85. Parameters Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 060101040207. WET, Whole Effluent Toxicity; CBOD₅, Carbonaceous Biochemical Oxygen Demand (5-Day); TRC, Total Residual Chlorine; TSS, Total Suspended Solids.

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4.2.B.vii.b. Nonpoint Source Contributions.

LIVESTOCK (COUNTS)						
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
603	1,146	79	<5	124,299	84	26

Table 4-86. Summary of Livestock Count Estimates in Subwatershed 060101040207. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

LIVESTOCK COUNTS							
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
Hamblen	8,620	16,376	1,129	233	1,776,000	1,195	367

Table 4-87. Summary of Livestock Count Estimates in Hamblen County. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

County	INVENTORY		REMOVAL RATE	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Hamblen	32.8	32.8	0.0	0.0

Table 4-88. Forest Acreage and Annual Removal Rates (1987-1994) in Hamblen County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.57
Grass (Hayland)	0.36
Legumes, Grass (Hayland)	0.15
Grass, Forbs, Legumes (Mixed Pasture)	0.30
Corn (Row Crops)	14.92
Tobacco (Row Crops)	8.43
Aquaculture in a Crop Rotation	0.15
Other Land in Farms	0.21
Farmsteads and Ranch Headquarters	0.13

Table 4-89. Annual Estimated Total Soil Loss in Subwatershed 060101040207.

4.2.B.viii. 060101040208 (German Creek).

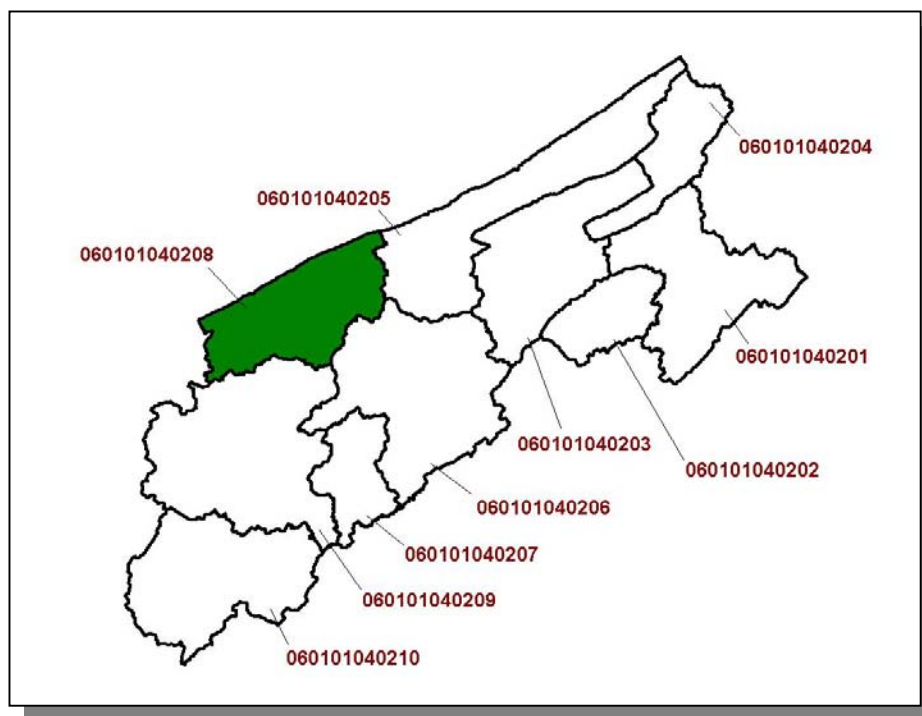


Figure 4-110. Location of Subwatershed 060101040208. All HUC-12 subwatershed boundaries are shown for reference.

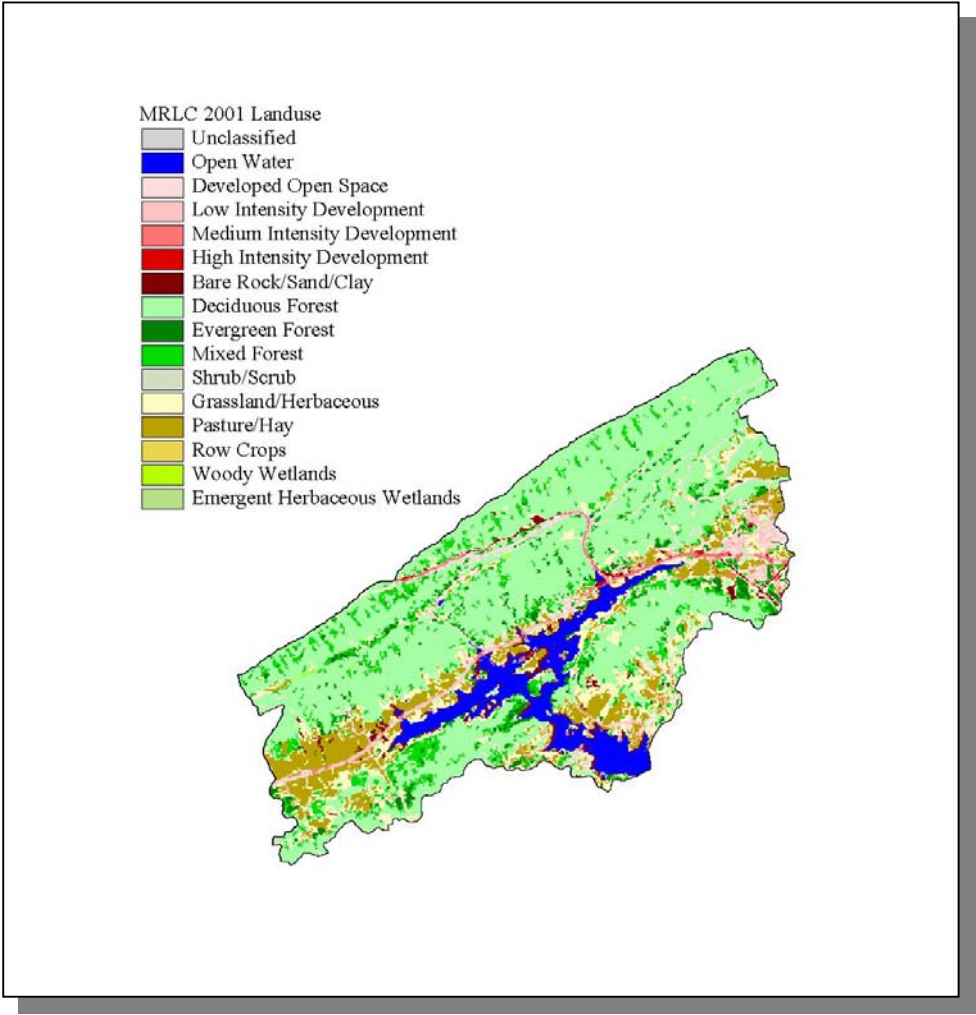


Figure 4-111. Illustration of Land Use Distribution in Subwatershed 060101040208.

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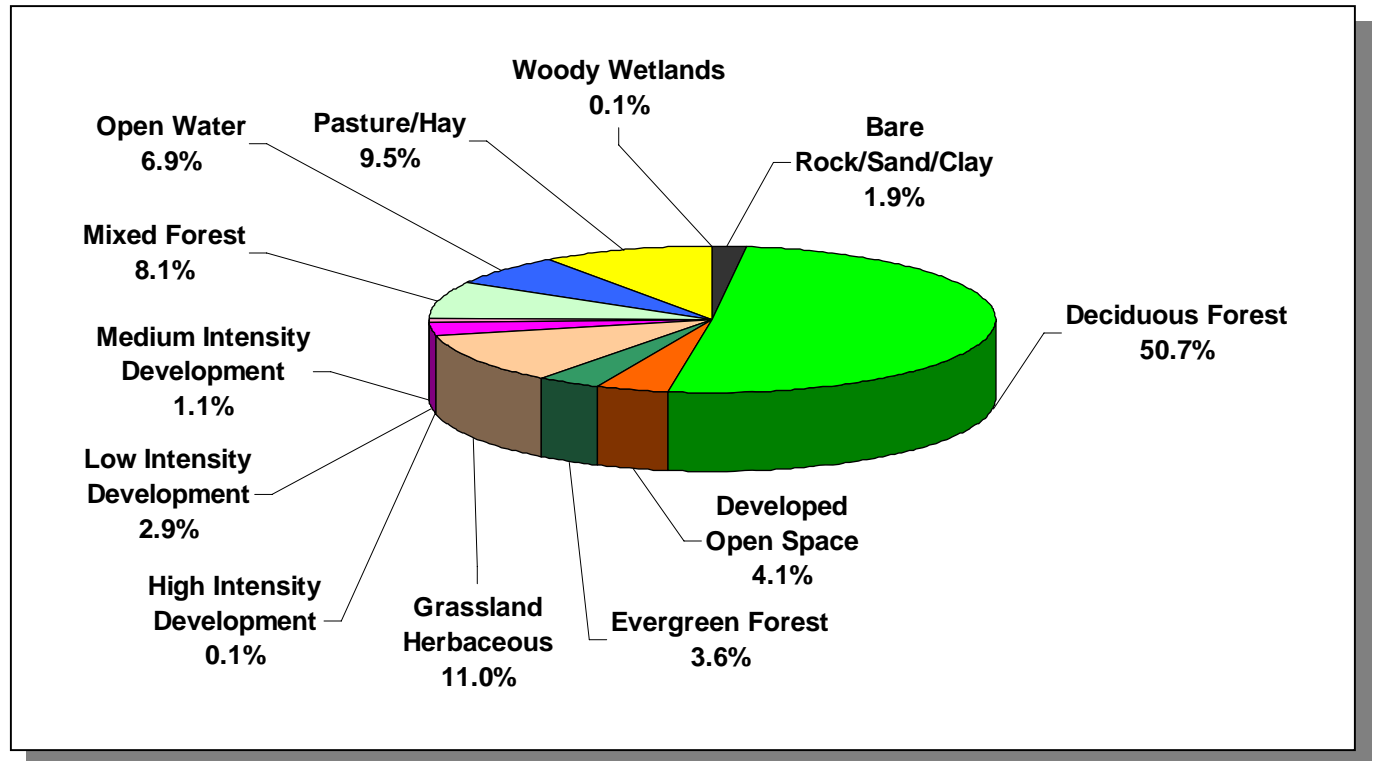


Figure 4-112. Land Use Distribution in Subwatershed 060101040208. More information is provided in Appendix IV.

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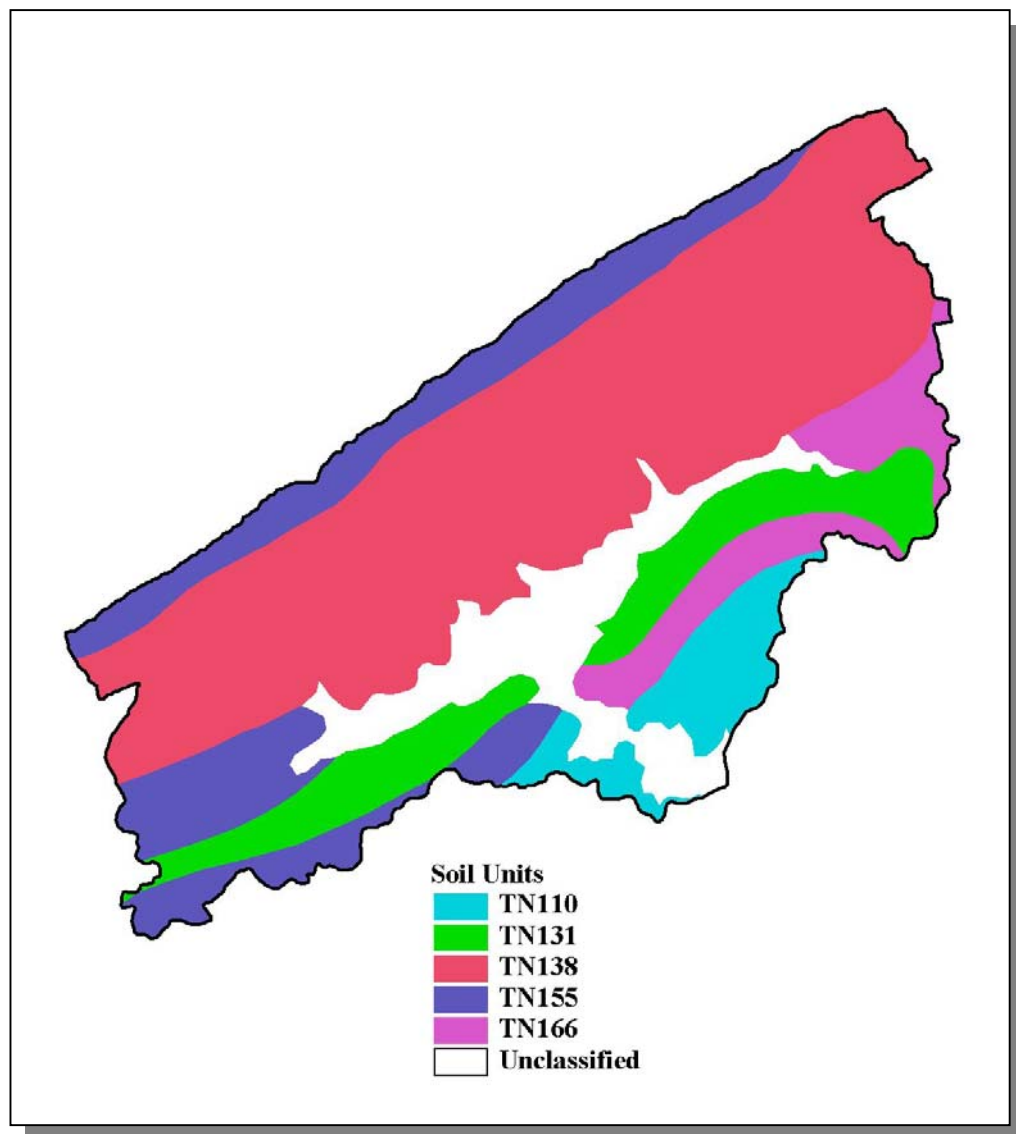


Figure 4-113. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040208.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN110	0.00	B	2.22	4.96	Loam	0.31
TN131	0.00	C	1.17	4.95	Silty Loam	0.33
TN138	0.00	C	2.48	4.26	Sandy Loam	0.22
TN155	0.00	C	1.71	5.31	Loam	0.32
TN166	1.00	C	2.36	5.06	Loam	0.30

Table 4-90. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040208. The definition of "Hydrologic Group" is provided in Appendix IV.

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County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-2000)
	1990	1997	2000		1990	1997	2000	
Grainger	17,095	19,456	20,659	12.92	2,208	2,513	2,668	20.8
Hancock	6,739	6,801	6,786	0.13	9	9	9	0.0
Hawkins	44,565	48,821	53,563	0.01	5	5	6	20.0
Total	68,399	75,078	81,008		2,222	2,527	2,683	20.7

Table 4-91. Population Estimates in Subwatershed 060101040208.

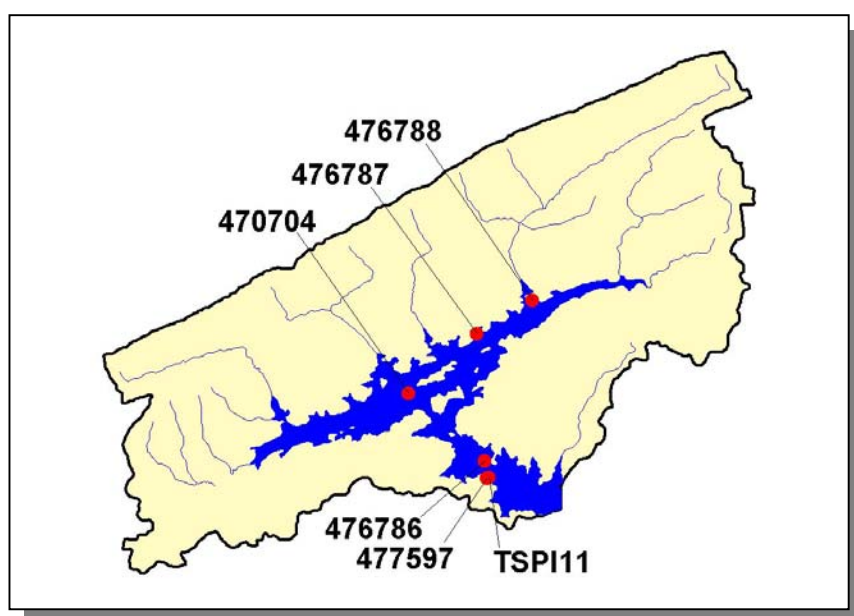


Figure 4-114. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 060101040208. More information, including site names and locations, is provided in Appendix IV.

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4.2.B.viii.a. Point Source Contributions.

There are no point source contributions in this subwatershed.

4.2.B.viii.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
869	1,715	68	<5	37	14

Table 4-92. Summary of Livestock Count Estimates in Subwatershed 060101040208. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Grainger	12,115	23,927	942	1,184	510	195
Hancock	7,079	14,311	89	364	0	67
Hawkins	18,796	36,429	903	1,079	442	243

Table 4-93. Summary of Livestock Count Estimates in Grainger, Hancock, and Hawkins Counties. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.

County	INVENTORY		REMOVAL RATE	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Grainger	102.6	102.6	0.3	1.8
Hancock	92.9	92.9	2.7	14.2
Hawkins	177.4	177.4	0.4	2.1

Table 4-94. Forest Acreage and Annual Removal Rates (1987-1994) in Grainger, Hancock, and Hawkins Counties.

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CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	1.01
Grass (Hayland)	0.32
Legumes, Grass (Hayland)	0.60
Legumes (Hayland)	0.16
Grass, Forbs, Legumes (Mixed Pasture)	0.84
Corn (Row Crops)	5.67
Tobacco (Row Crops)	7.34
Other Vegetable and Truck Crops	33.50
Farmsteads and Ranch Headquarters	0.52

Table 4-95. Annual Estimated Total Soil Loss in Subwatershed 060101040208.

4.2.B.ix. 060101040209 (Cherokee Lake).

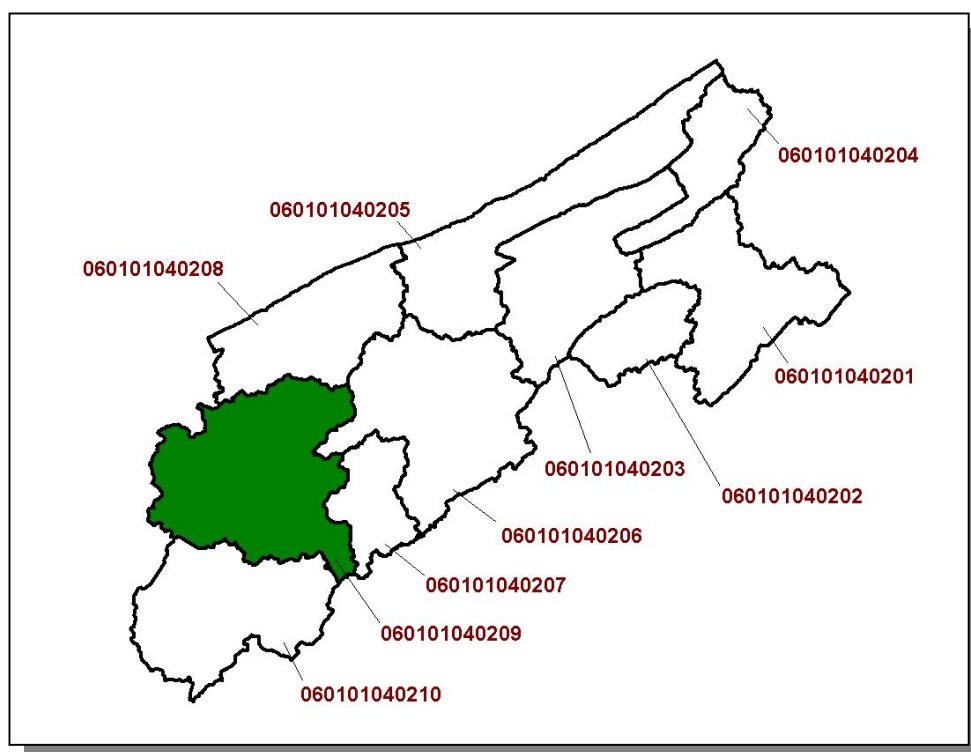


Figure 4-115. Location of Subwatershed 060101040209. All HUC-12 subwatershed boundaries are shown for reference.

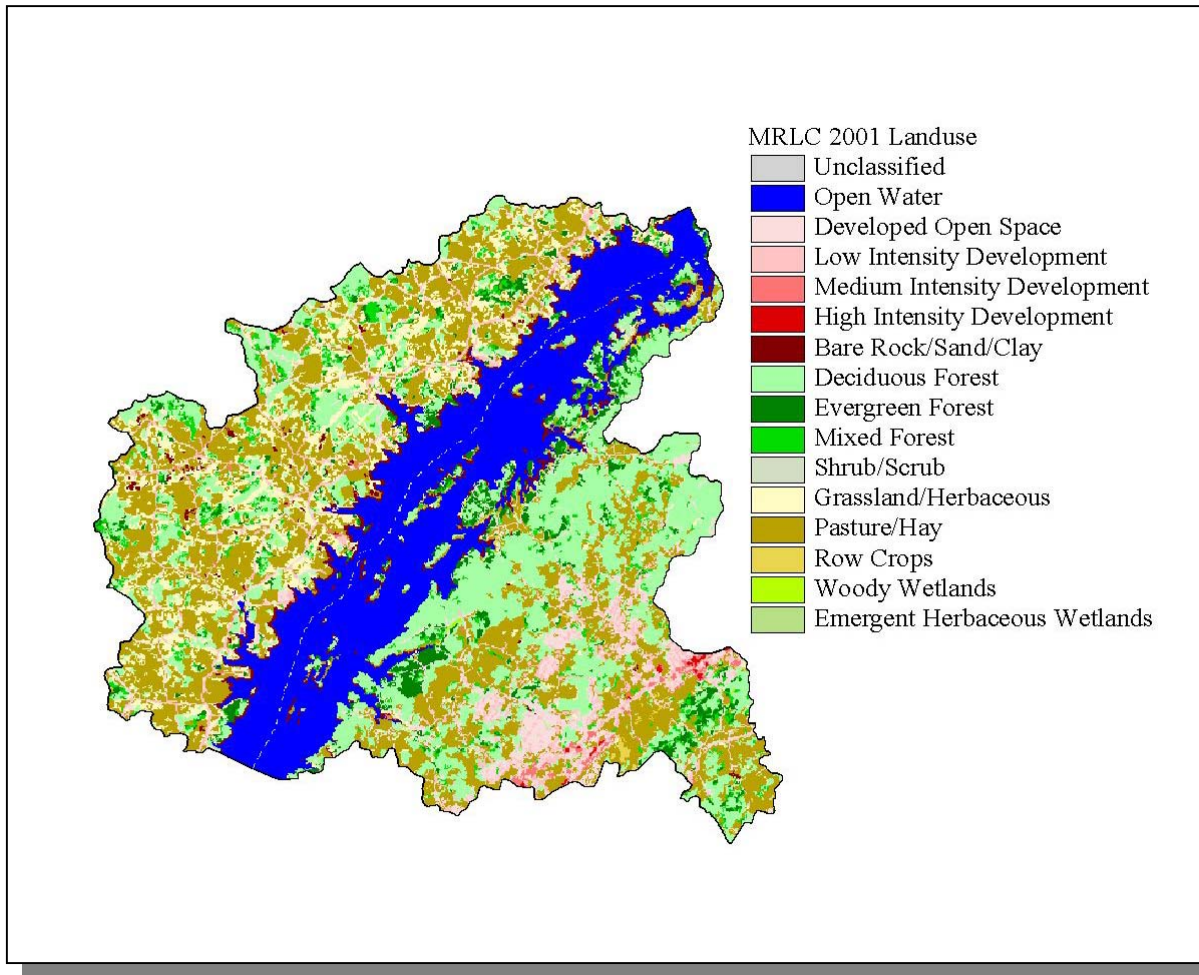


Figure 4-116. Illustration of Land Use Distribution in Subwatershed 060101040209.

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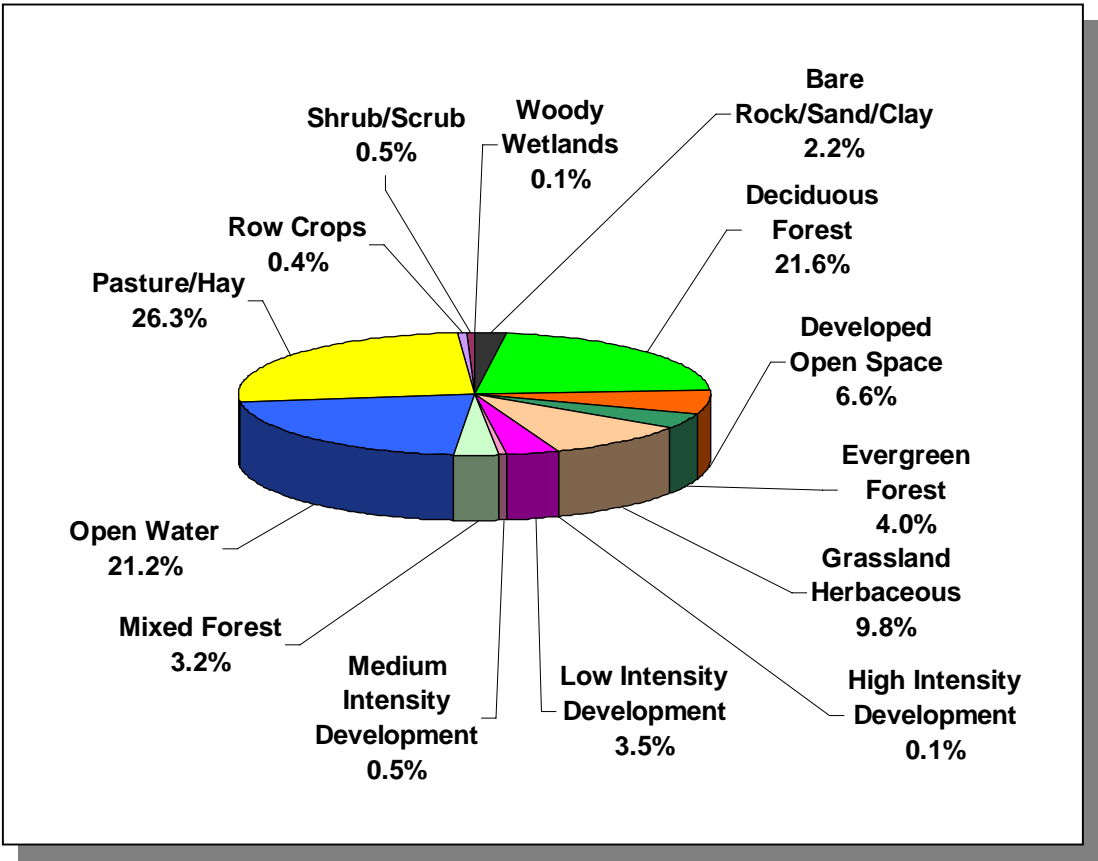


Figure 4-117. Land Use Distribution in Subwatershed 060101040209. More information is provided in Appendix IV.

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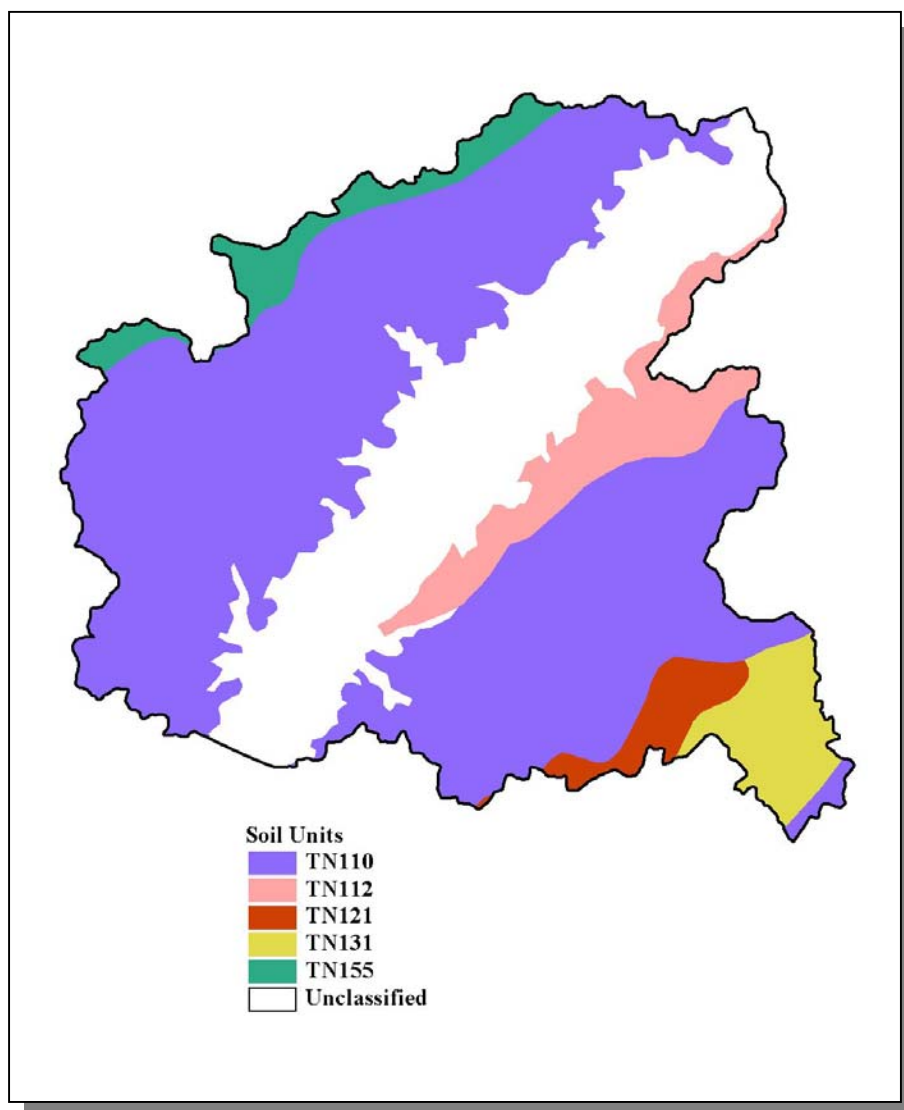


Figure 4-118. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040209.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN110	0.00	B	2.22	4.96	Loam	0.31
TN112	6.00	C	2.36	5.09	Loam	0.35
TN121	0.00	B	1.30	5.21	Loam	0.33
TN131	0.00	C	1.17	4.95	Silty Loam	0.33
TN155	0.00	C	1.71	5.31	Loam	0.32

Table 4-96. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040209. The definition of "Hydrologic Group" is provided in Appendix IV.

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County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-2000)
	1990	1997	2000		1990	1997	2000	
Grainger	17,095	19,456	20,659	10.68	1,827	2,079	2,207	20.8
Hamblen	50,480	53,699	58,128	19.95	10,069	10,711	11,595	15.2
Total	67,575	73,155	78,787		11,896	12,790	13,802	16.0

Table 4-97. Population Estimates in Subwatershed 060101040209.

			NUMBER OF HOUSING UNITS			
Populated Place	County	Population	Total	Public Sewer	Septic Tank	Other
Morristown	Hamblen	21,385	9,248	8,768	466	14

Table 4-98. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 060101040209.

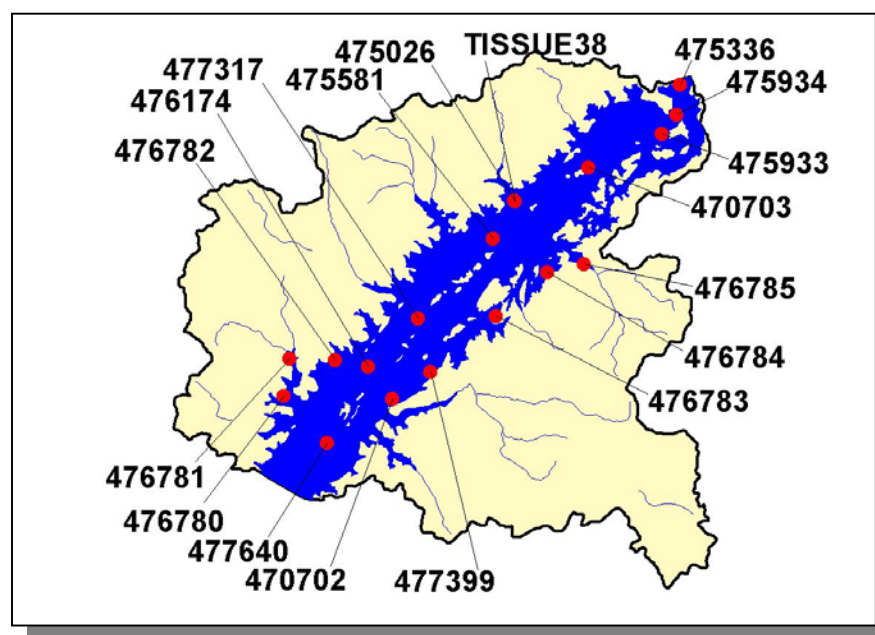


Figure 4-119. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 060101040209. More information, including site names and locations, is provided in Appendix IV.

4.2.B.ix.a. Point Source Contributions.

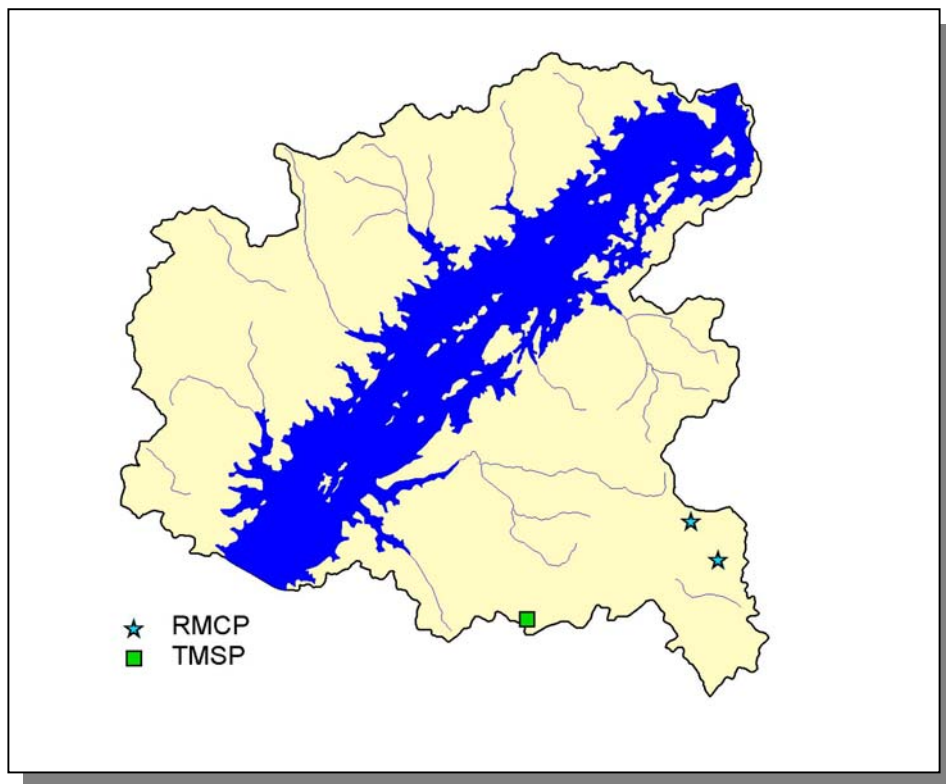


Figure 4-120. Location of Permits Issued in Subwatershed 060101040209. More information, including the names of facilities, is provided in Appendix IV.

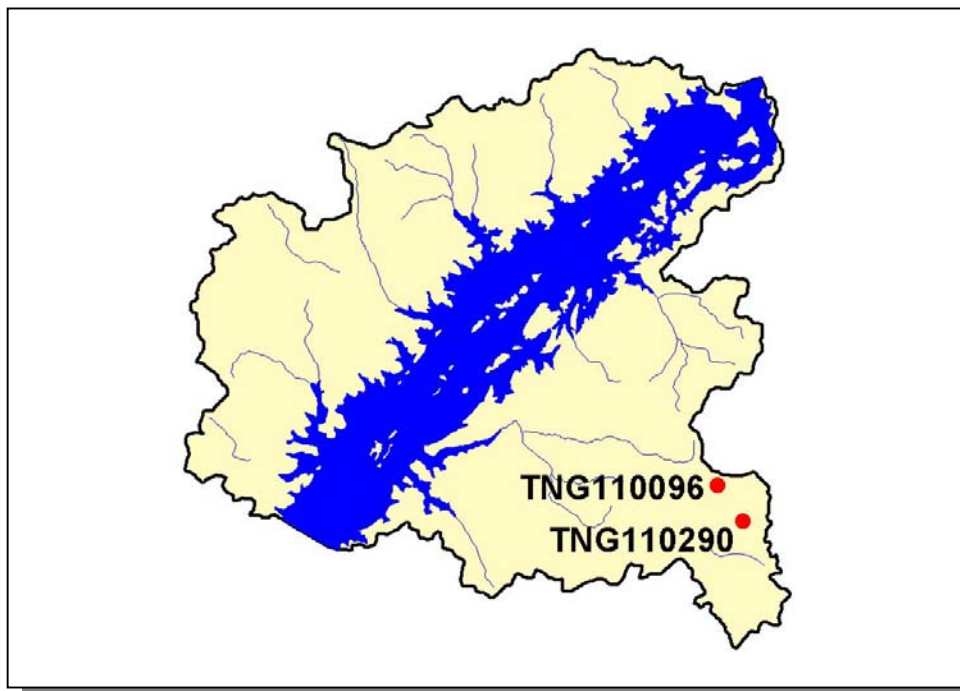


Figure 4-121. Location of Ready Mix Concrete Plants (RMCP) in Subwatershed 060101040209. More information is provided in Appendix IV.

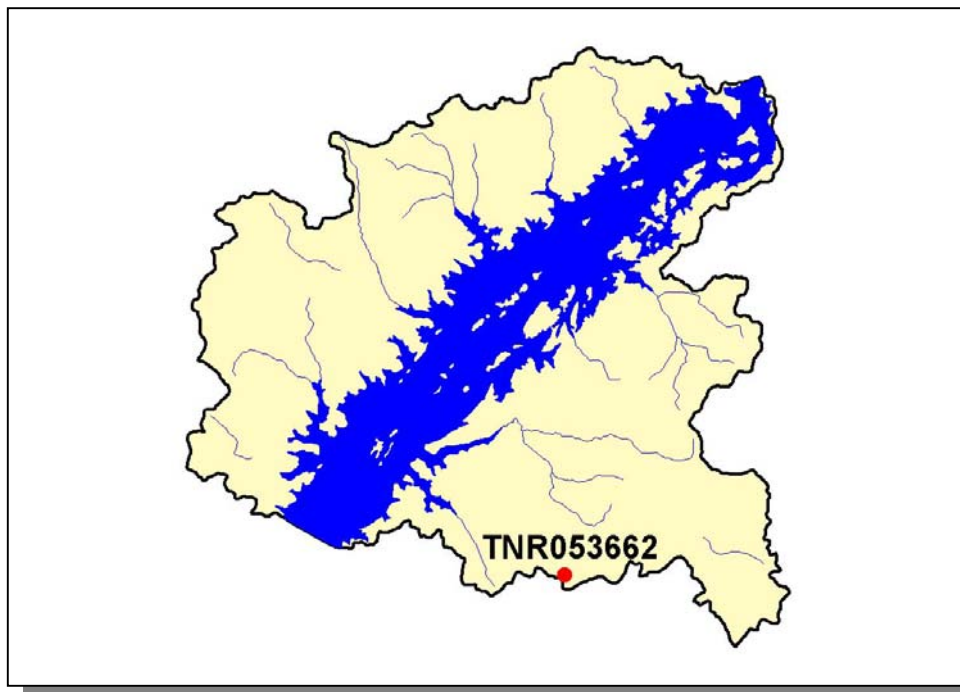


Figure 4-122. Location of TMSP Sites in Subwatershed 060101040209. More information, including the names of facilities, is provided in Appendix IV.

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4.2.B.ix.b. Nonpoint Source Contributions.

LIVESTOCK (COUNTS)						
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
2,984	5,822	283	7	196,249	218	73

Table 4-99. Summary of Livestock Count Estimates in Subwatershed 060101040209.
According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

LIVESTOCK COUNTS							
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
Grainger	12,115	23,927	942	1,184	0	510	195
Hamblen	8,620	16,376	1,129	233	1,776,000	1,195	367

Table 4-100. Summary of Livestock Count Estimates in Grainger and Hamblen Counties.
According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

County	INVENTORY		REMOVAL RATE	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Grainger	102.6	102.6	0.3	1.8
Hamblen	32.8	32.8	0.0	0.0

Table 4-101. Forest Acreage and Annual Removal Rates (1987-1994) in Grainger and Hamblen Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.78
Grass (Hayland)	0.34
Legumes, Grass (Hayland)	0.37
Grass, Forbs, Legumes (Mixed Pasture)	0.56
Corn (Row Crops)	10.44
Tobacco (Row Crops)	7.84
Aquaculture in Crop Rotation	0.15
Other Land in Farms	0.21
Farmsteads and Ranch Headquarters	0.32

Table 4-102. Annual Estimated Total Soil Loss in Subwatershed 060101040209.

4.2.B.x. 060101040210 (Cherokee Lake).

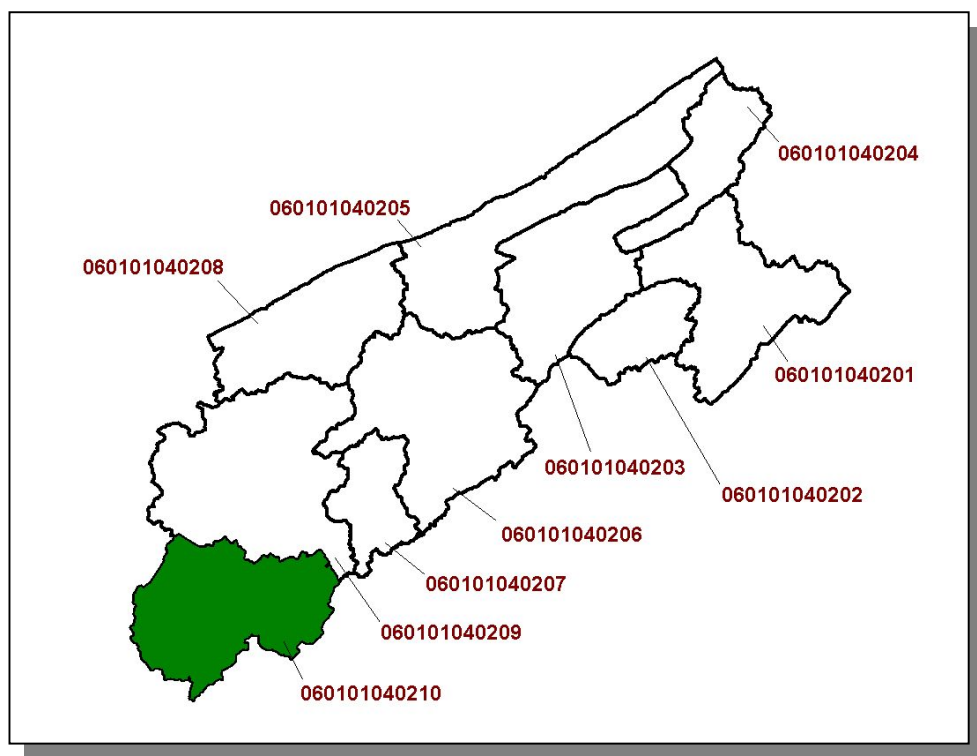


Figure 4-123. Location of Subwatershed 060101040210. All HUC-12 subwatershed boundaries are shown for reference.

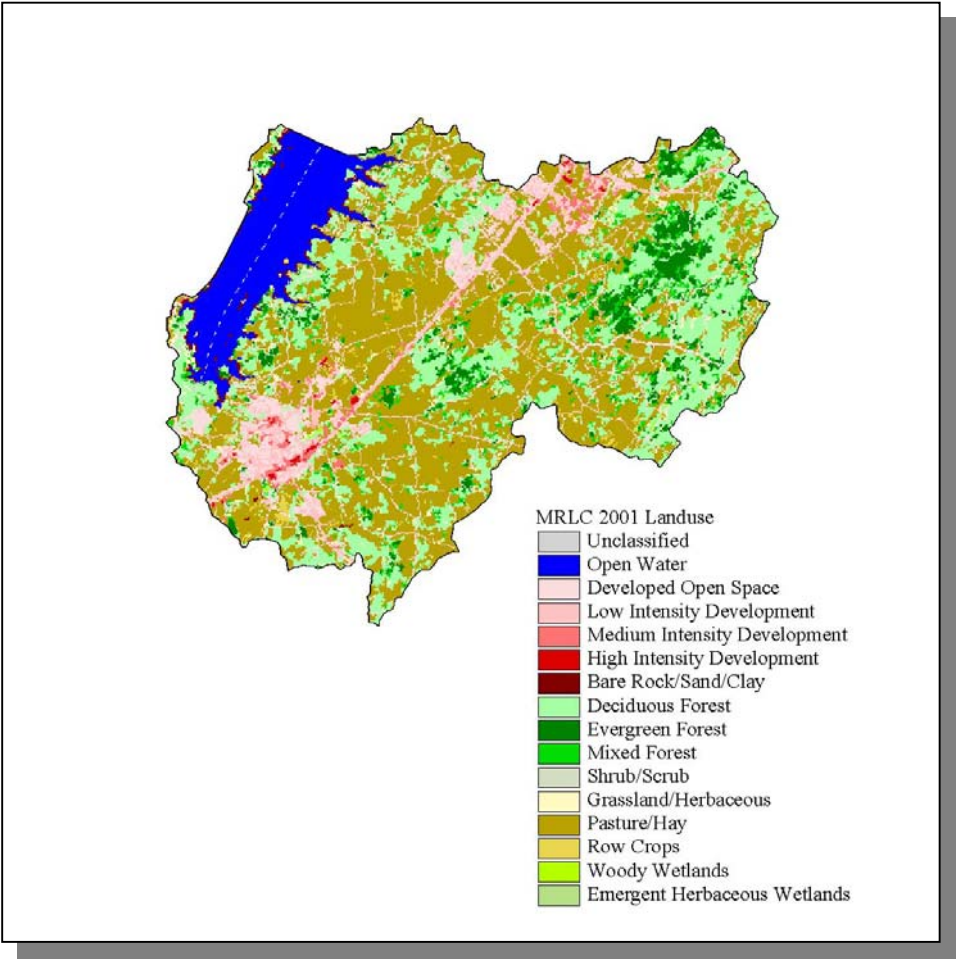


Figure 4-124. Illustration of Land Use Distribution in Subwatershed 060101040210.

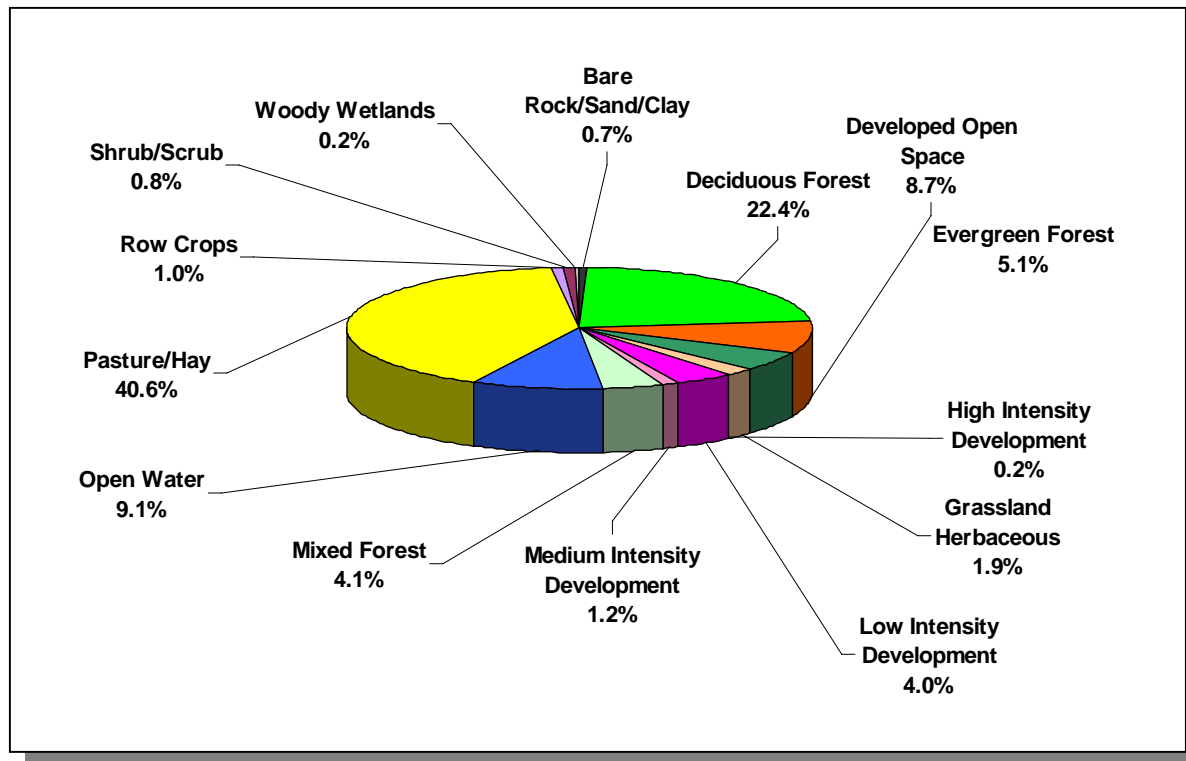


Figure 4-125. Land Use Distribution in Subwatershed 060101040210. More information is provided in Appendix IV.

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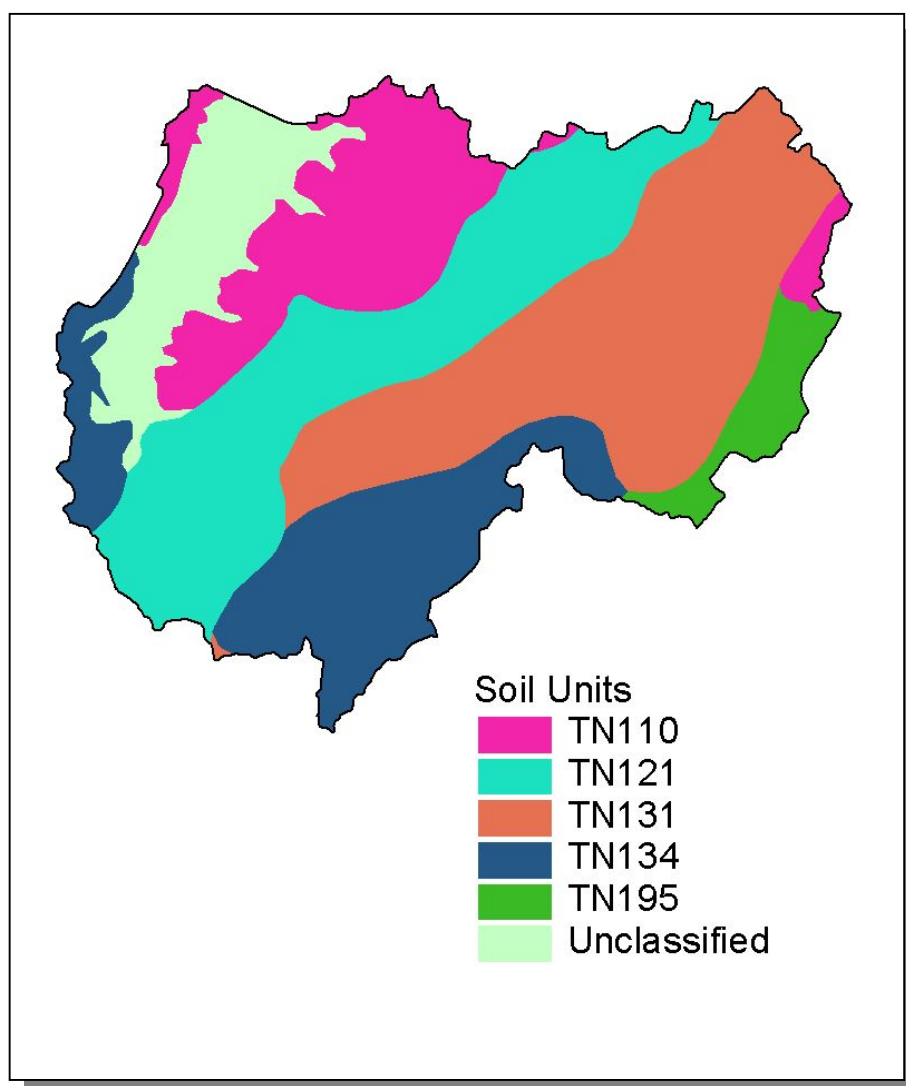


Figure 4-126. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040210.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN110	0.00	B	2.22	4.96	Loam	0.31
TN121	0.00	B	1.30	5.21	Loam	0.33
TN131	0.00	C	1.17	4.95	Silty Loam	0.33
TN134	0.00	B	1.38	5.18	Loam	0.31
TN195	0.00	C	1.93	5.19	Silty Loam	0.34

Table 4-103. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040210. The definition of "Hydrologic Group" is provided in Appendix IV.

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County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-2000)
	1990	1997	2000		1990	1997	2000	
Grainger	17,095	19,456	20,659	0.83	142	161	171	20.4
Hamblen	50,480	53,699	58,128	5.89	2,976	3,166	3,427	15.2
Jefferson	33,016	42,168	44,294	11.45	3,781	4,829	5,073	34.2
Total	100,591	115,323	123,081		6,899	8,156	8,671	25.7

Table 4-104. Population Estimates in Subwatershed 060101040210.

Populated Place	County	Population	NUMBER OF HOUSING UNITS			
			Total	Public Sewer	Septic Tank	Other
Jefferson City	Jefferson	5,494	2,006	1,922	84	0
Morristown	Hamblen	21,385	9,248	8,768	466	14
Total		26,879	11,254	10,690	550	14

Table 4-105. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 060101040210.

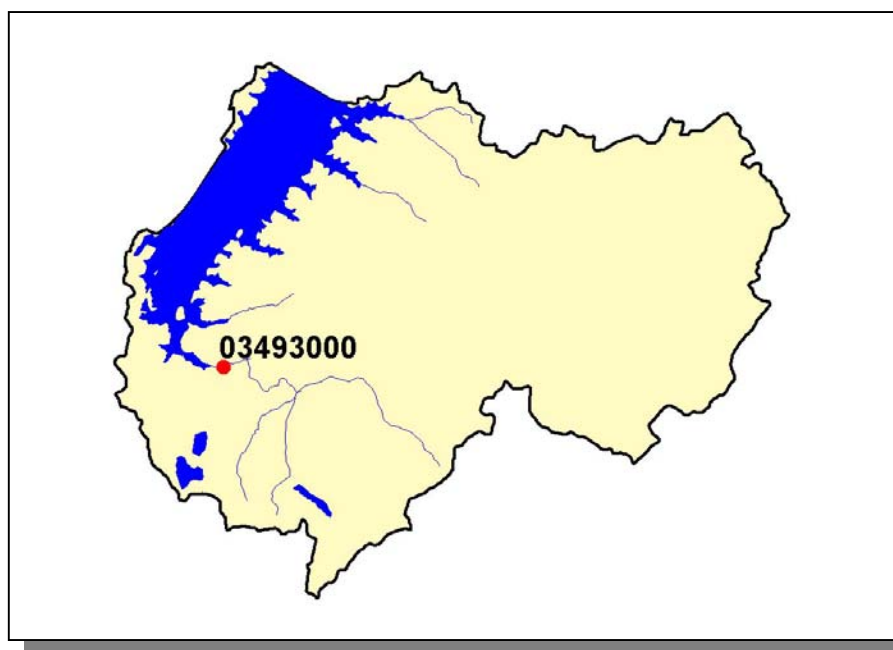


Figure 4-127. Location of Historical Streamflow Data Collection Sites in Subwatershed 060101040210. More information is provided in Appendix IV.

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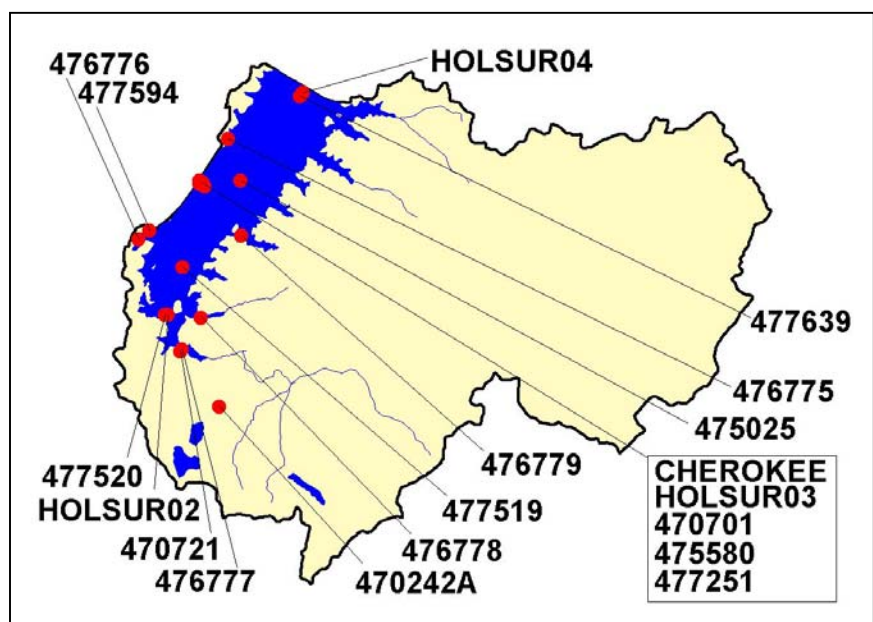


Figure 4-128. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 060101040210. More information, including site names and locations, is provided in Appendix IV.

4.2.B.x.a. Point Source Contributions.

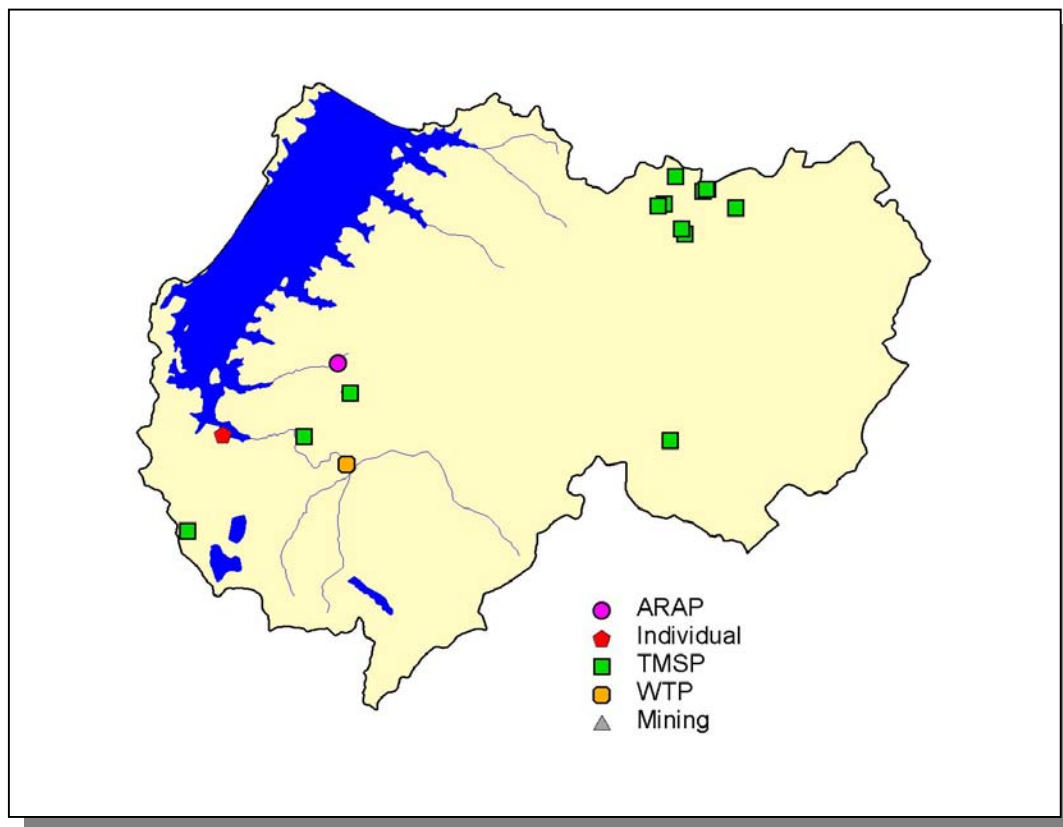


Figure 4-129. Location of Permits Issued in Subwatershed 060101040210. More information, including the names of facilities, is provided in Appendix IV.

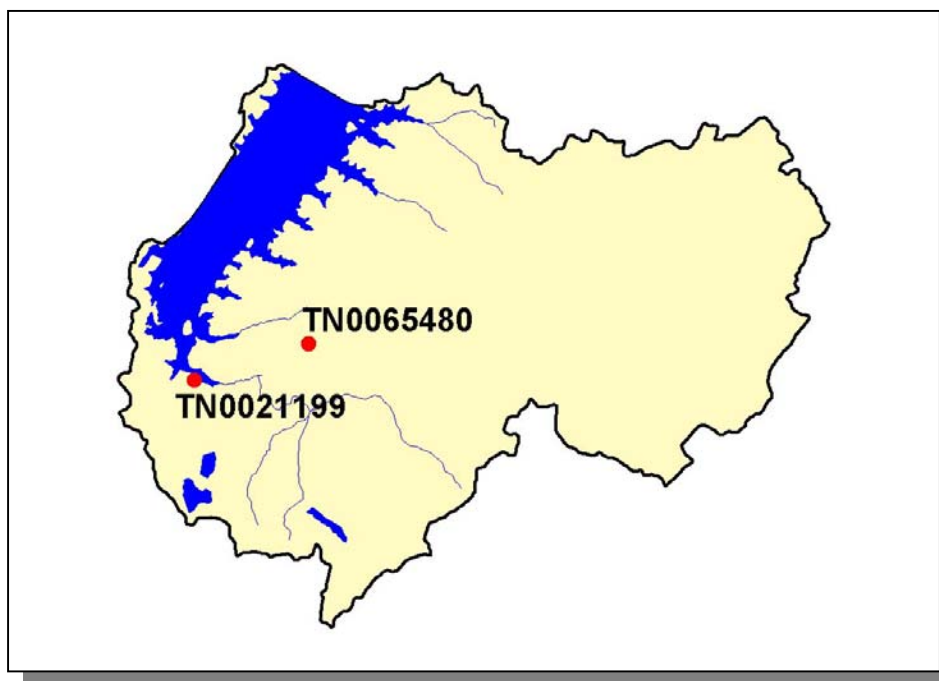


Figure 4-130. Location of Active NPDES Sites in Subwatershed 060101040210. More information, including the names of facilities, is provided in Appendix IV.

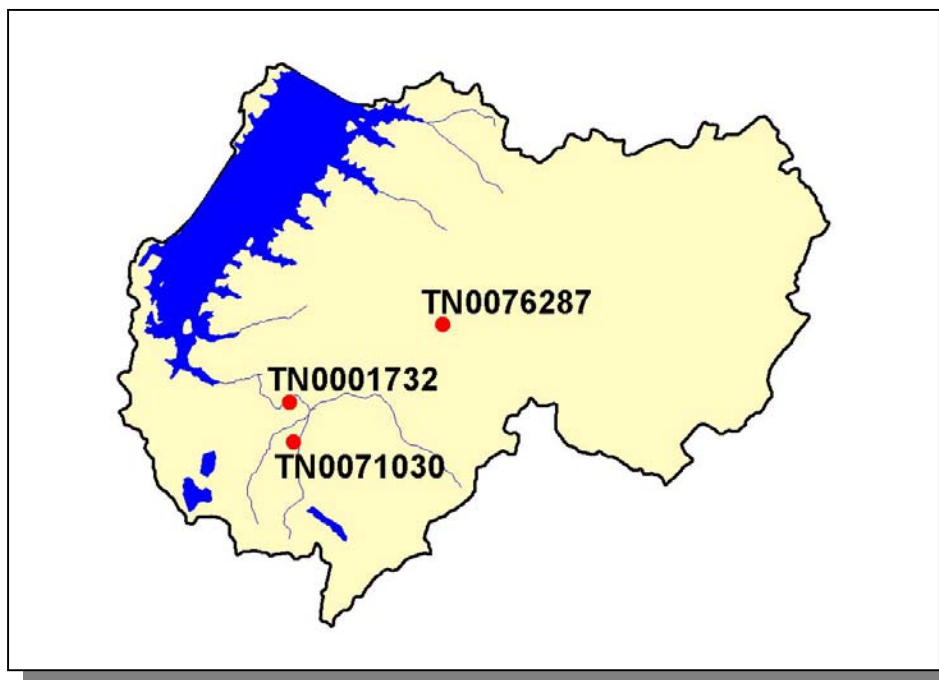


Figure 4-131. Location of Active Mining Sites in Subwatershed 060101040210. More information, including the names of mining operations, is provided in Appendix IV.

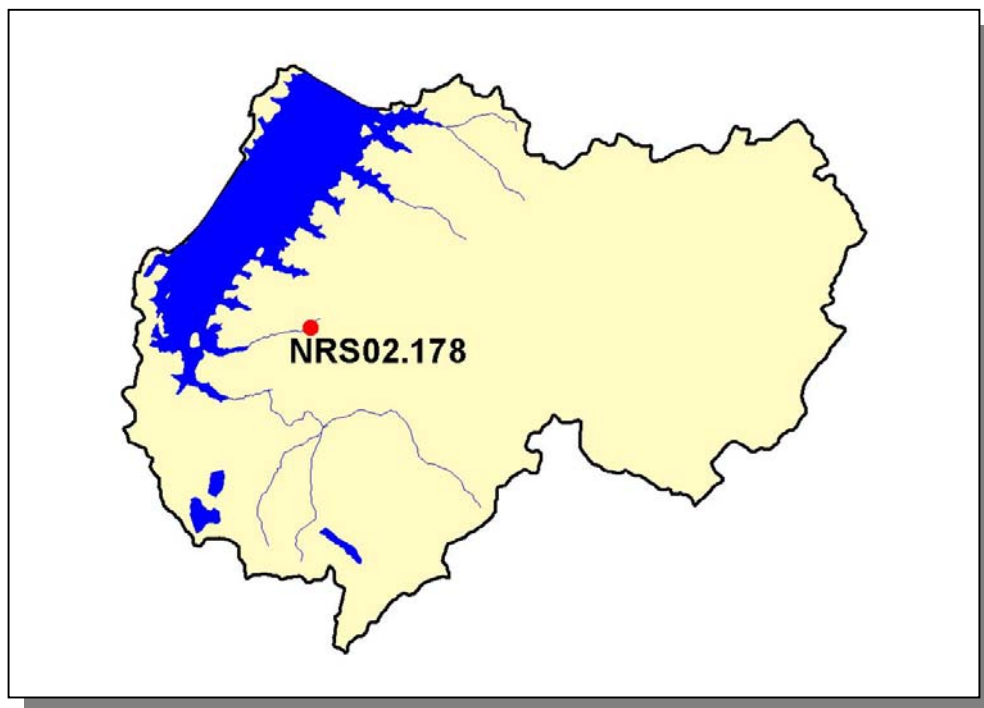


Figure 4-132. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 060101040210. More information is provided in Appendix IV.

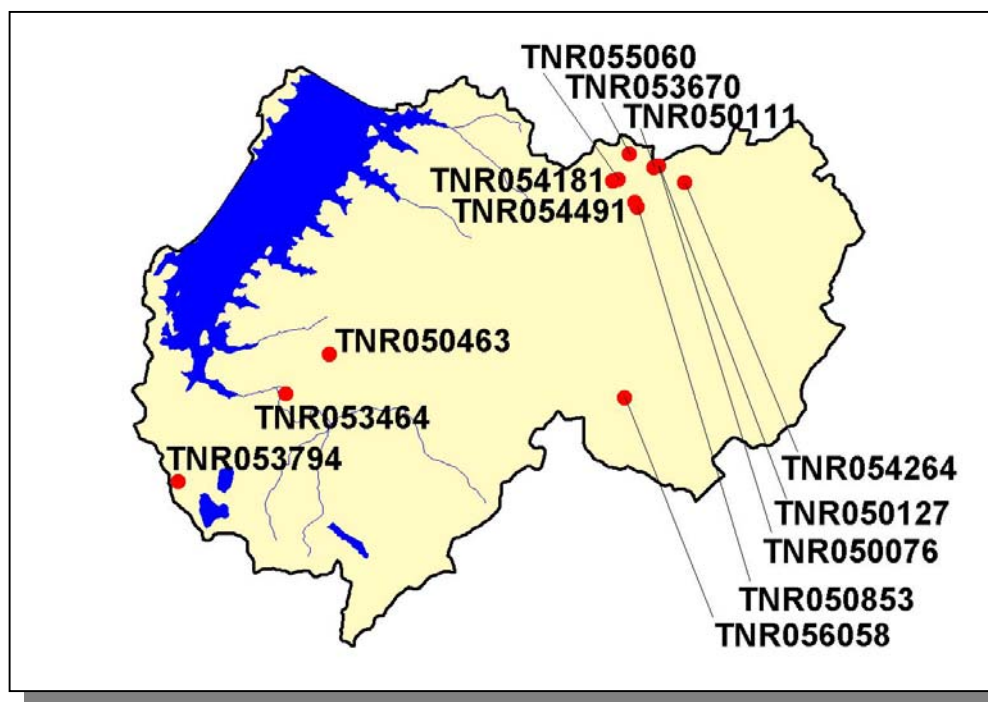


Figure 4-133. Location of TMSP Sites in Subwatershed 060101040210. More information, including the names of facilities, is provided in Appendix IV.

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4.2.B.x.b. Nonpoint Source Contributions.

LIVESTOCK (COUNTS)						
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
2,636	5,674	314	<5	350,975	95	96

Table 4-106. Summary of Livestock Count Estimates in Subwatershed 060101040210. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

LIVESTOCK COUNTS							
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
Grainger	12,115	23,927	942	1,184	0	510	195
Hamblen	8,620	16,376	1,129	233	1,776,000	1,195	367
Jefferson	16,126	35,718	1,878	1,633	1,880,000	183	567

Table 4-107. Summary of Livestock Count Estimates in Grainger, Hamblen, and Jefferson Counties. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

County	INVENTORY		REMOVAL RATE	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Grainger	102.6	102.6	0.3	1.8
Hamblen	32.8	32.8	0	0
Jefferson	62.2	62.2	0.6	1.8

Table 4-108. Forest Acreage and Annual Removal Rates (1987-1994) in Grainger, Hamblen, and Jefferson Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.58
Grass (Hayland)	0.27
Legumes, Grass (Hayland)	0.34
Grass, Forbs, Legumes (Mixed Pasture)	0.42
Corn (Row Crops)	20.26
Tobacco (Row Crops)	4.35
Oats (Close-Grown Cropland)	13.51
Aquaculture in a Crop Rotation	0.15
Other Land in Farms	0.21
Farmsteads and Ranch Headquarters	0.05

Table 4-109. Annual Estimated Total Soil Loss in Subwatershed 060101040210.

4.2.C. 0601010403.

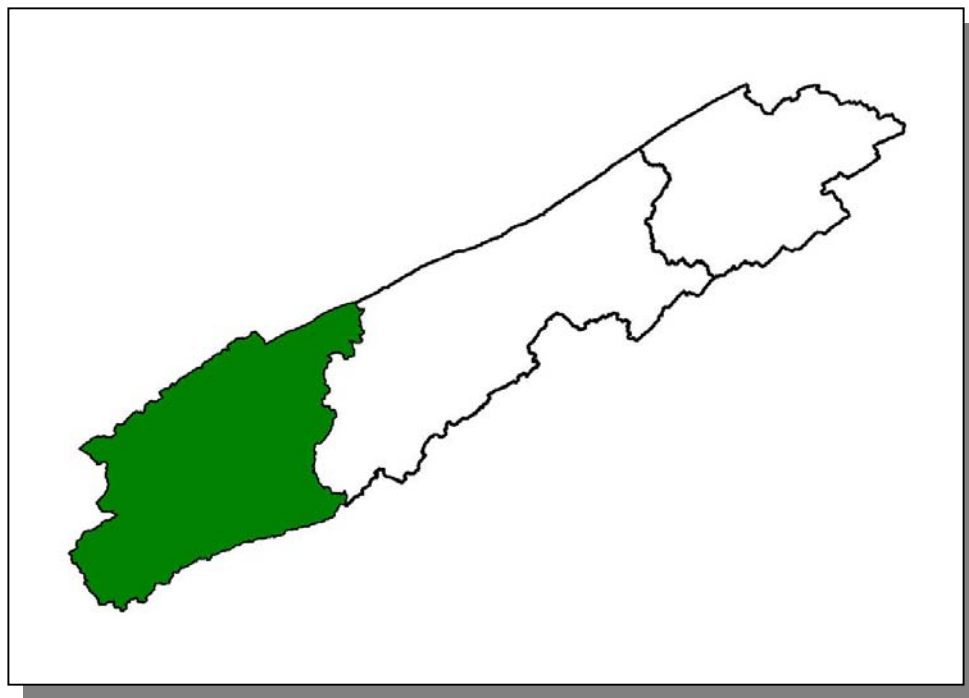


Figure 4-134. Location of Subwatershed 0601010403. All Holston River HUC-10 subwatershed boundaries are shown for reference.

4.2.C.i. 060101040301 (Holston River).

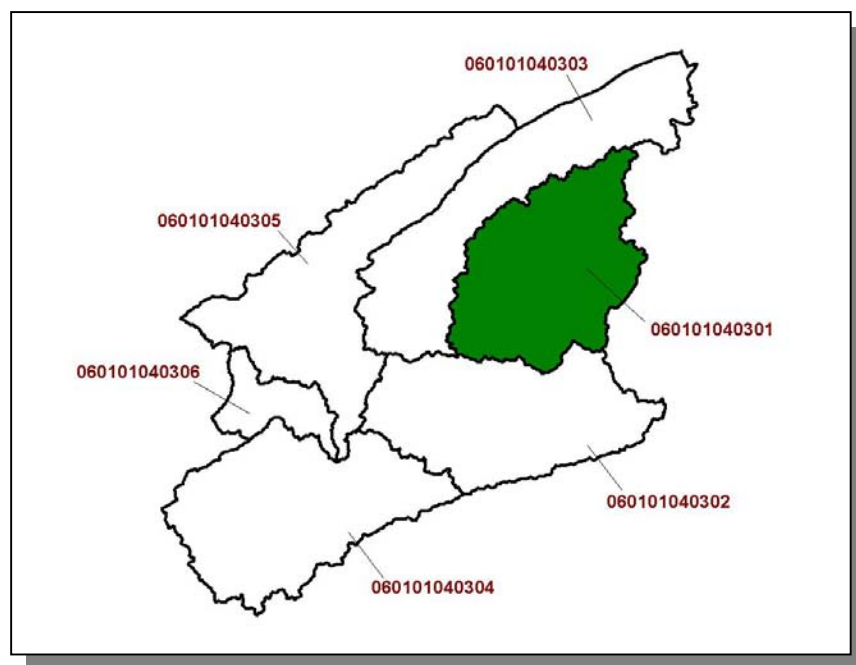


Figure 4-135. Location of Subwatershed 060101040301. All HUC-12 subwatershed boundaries are shown for reference.

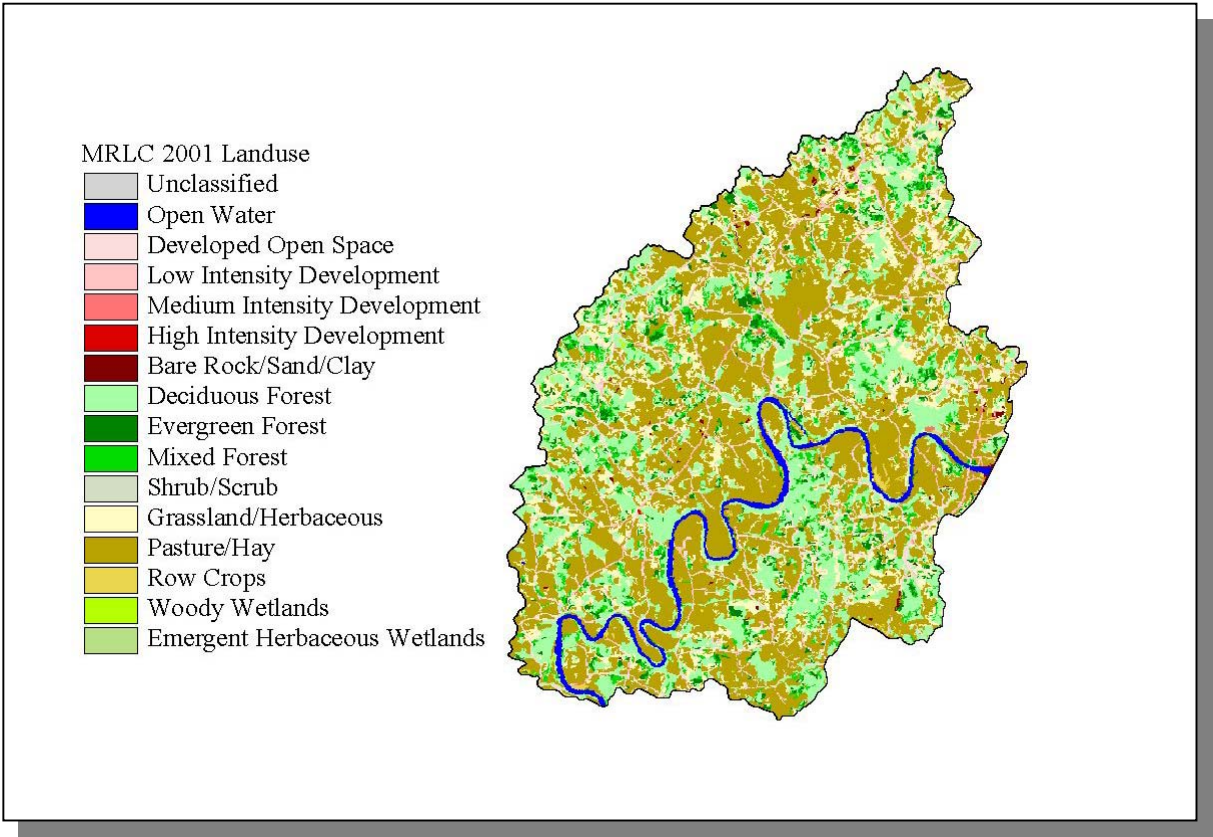


Figure 4-136. Illustration of Land Use Distribution in Subwatershed 060101040301.

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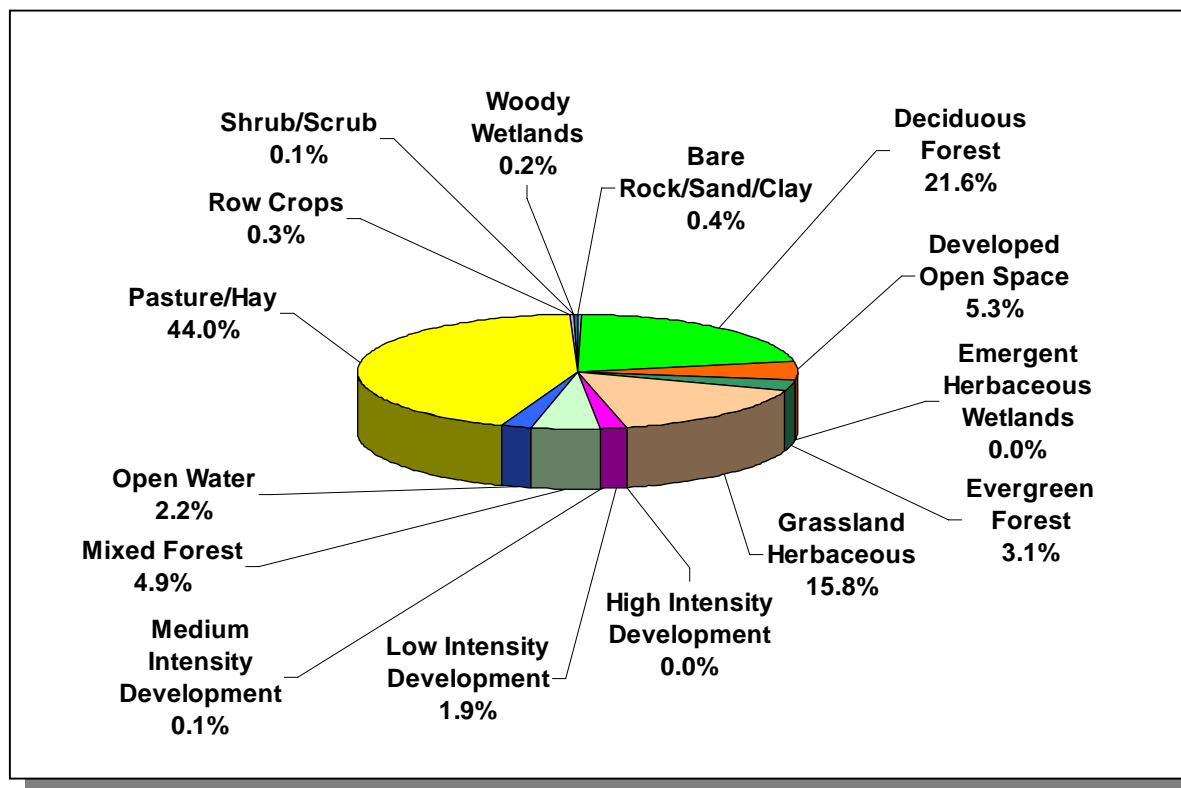


Figure 4-137. Land Use Distribution in Subwatershed 060101040301. More information is provided in Appendix IV.

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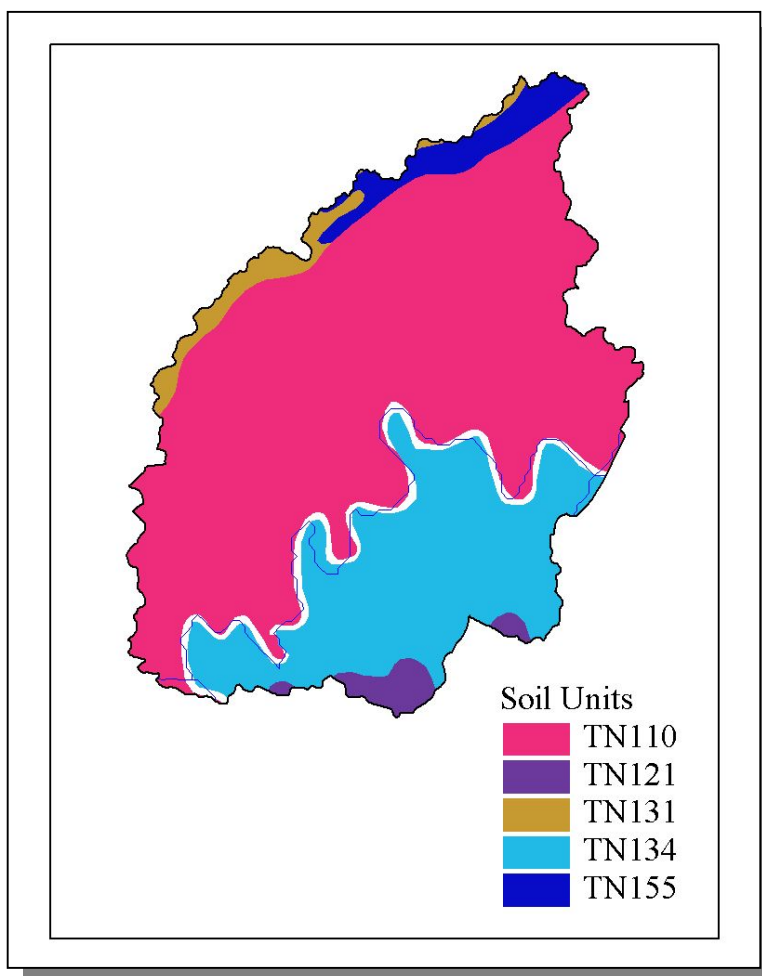


Figure 4-138. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040301.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN110	0.00	B	2.22	4.96	Loam	0.31
TN121	0.00	B	1.30	5.21	Loam	0.33
TN131	0.00	C	1.17	4.95	Silty Loam	0.33
TN134	0.00	B	1.38	5.18	Loam	0.31
TN155	0.00	C	1.71	5.31	Loam	0.32

Table 4-110. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040301. The definition of "Hydrologic Group" is provided in Appendix IV.

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County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-2000)
	1990	1997	2000		1990	1997	2000	
Grainger	17,095	19,456	20,659	15.65	2,676	3,045	3,233	20.8
Jefferson	33,016	42,168	44,294	5.24	1,730	2,210	2,321	34.2
Total	50,111	61,624	64,953		4,406	5,255	5,554	26.1

Table 4-111. Population Estimates in Subwatershed 060101040301.

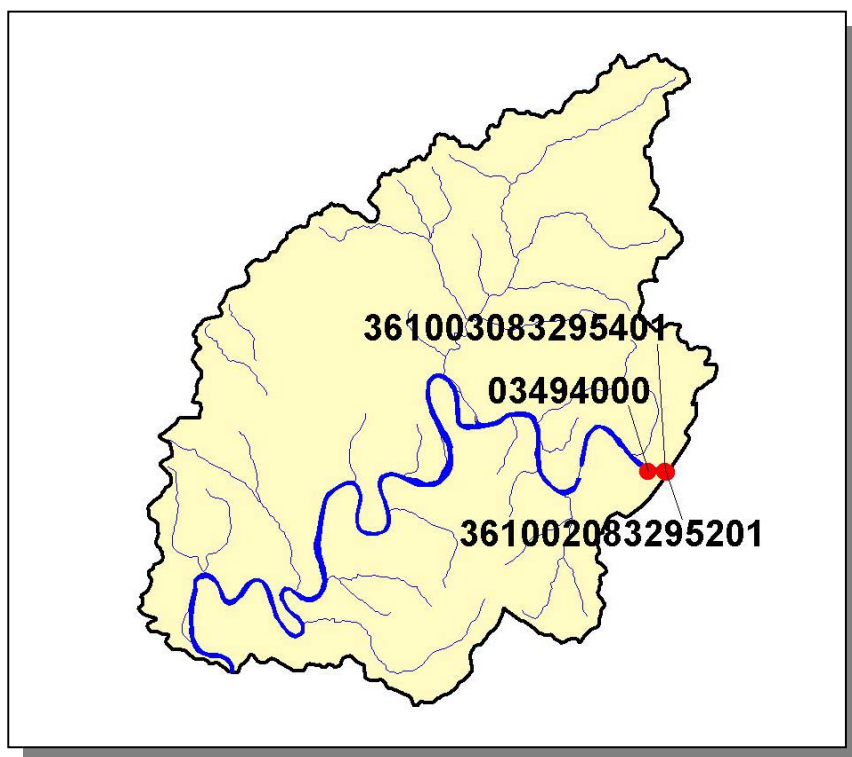


Figure 4-139. Location of Historical Streamflow Data Collection Sites in Subwatershed 060101040301. More information is provided in Appendix IV.

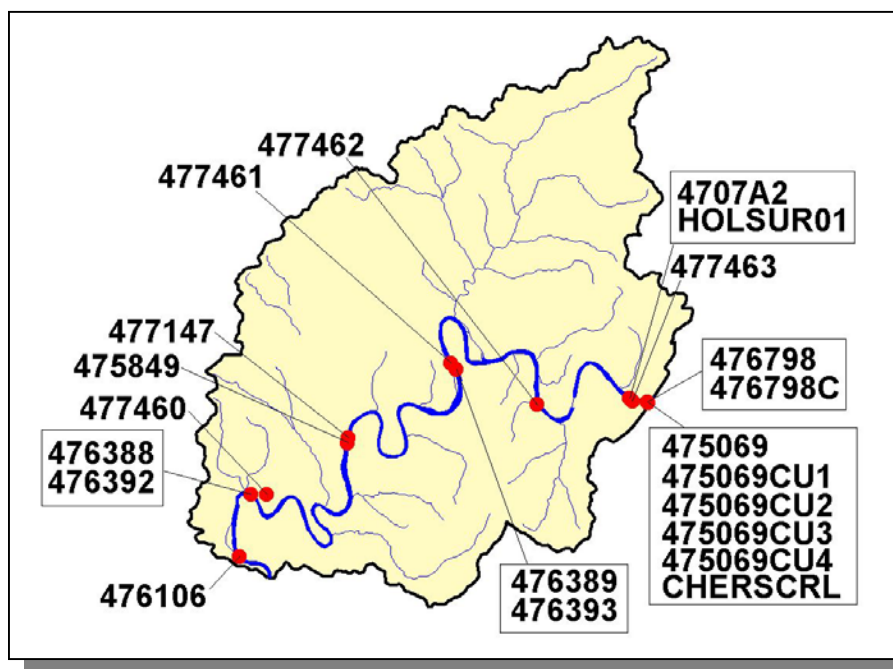


Figure 4-140. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 060101040301. More information, including site names and locations, is provided in Appendix IV.

4.2.C.i.a. Point Source Contributions.

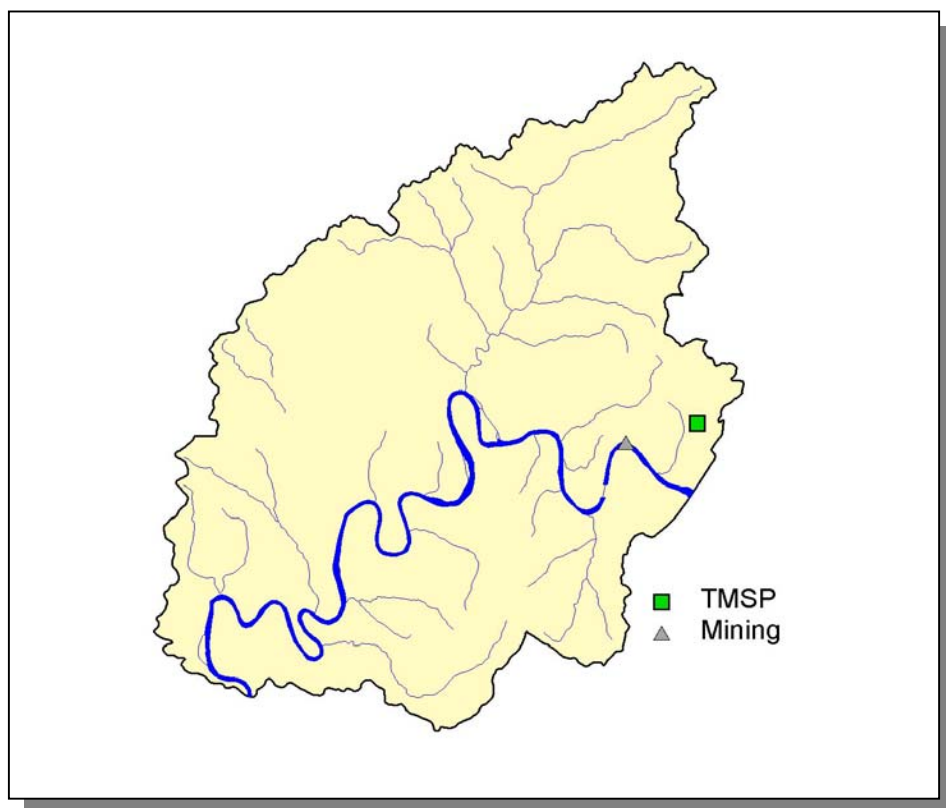


Figure 4-141. Location of Permits Issued in Subwatershed 060101040301. More information, including the names of facilities, is provided in Appendix IV.

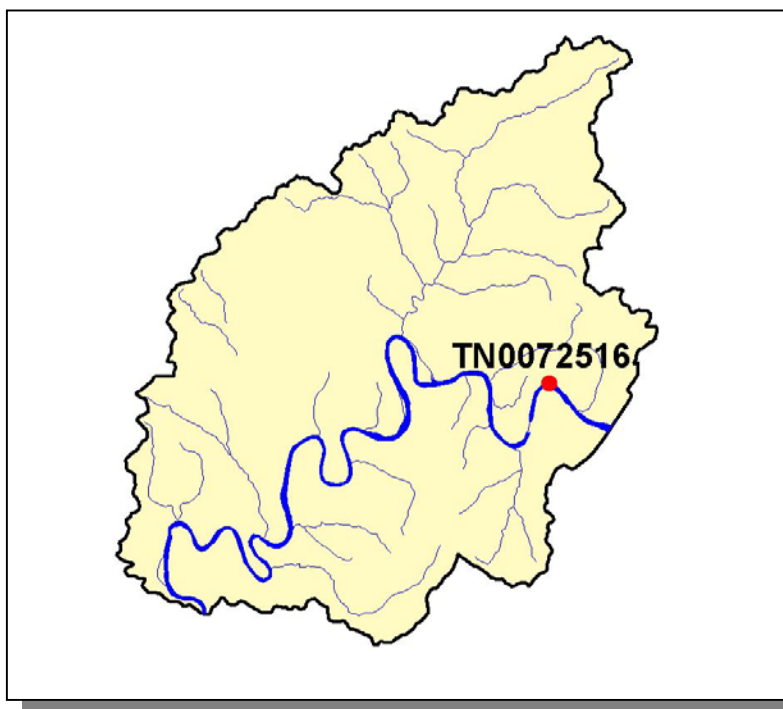


Figure 4-142. Location of Active Mining Sites in Subwatershed 060101040301. More information, including the names of mining operations, is provided in Appendix IV.



Figure 4-143. Location of TMSP Sites in Subwatershed 060101040301. More information, including the names of facilities, is provided in Appendix IV.

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4.2.C.i.b. Nonpoint Source Contributions.

LIVESTOCK (COUNTS)						
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
4,650	9,415	399	12	112,637	166	93

Table 4-112. Summary of Livestock Count Estimates in Subwatershed 060101040301.
According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

LIVESTOCK COUNTS							
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
Grainger	12,115	23,927	942	1,184	0	510	195
Jefferson	16,126	35,718	1,78	1,633	1,880,000	183	567

Table 4-113. Summary of Livestock Count Estimates in Grainger and Jefferson Counties.
According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

County	INVENTORY		REMOVAL RATE	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Grainger	102.6	102.6	0.3	1.8
Jefferson	62.2	62.2	0.6	1.8

Table 4-114. Forest Acreage and Annual Removal Rates (1987-1994) in Grainger and Jefferson Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.89
Grass (Hayland)	0.30
Legumes, Grass (Hayland)	0.55
Grass, Forbs, Legumes (Mixed Pasture)	0.74
Corn (Row Crops)	10.08
Tobacco (Row Crops)	6.13
Oats (Close-Grown Cropland)	13.51
Farmsteads and Ranch Headquarters	0.39

Table 4-115. Annual Estimated Total Soil Loss in Subwatershed 060101040301.

4.2.C.ii. 060101040302 (Holston River).

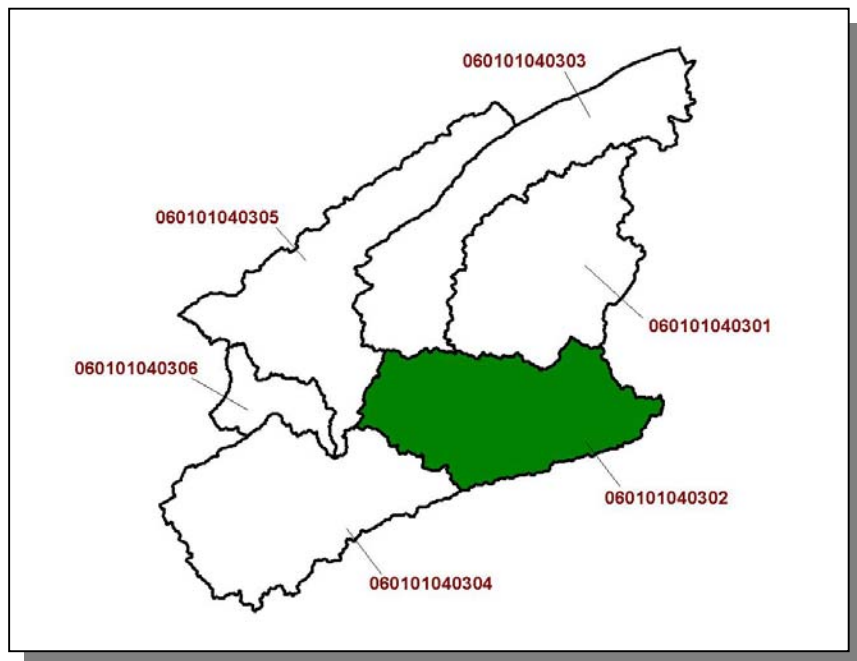


Figure 4-144. Location of Subwatershed 060101040302. All HUC-12 subwatershed boundaries are shown for reference.

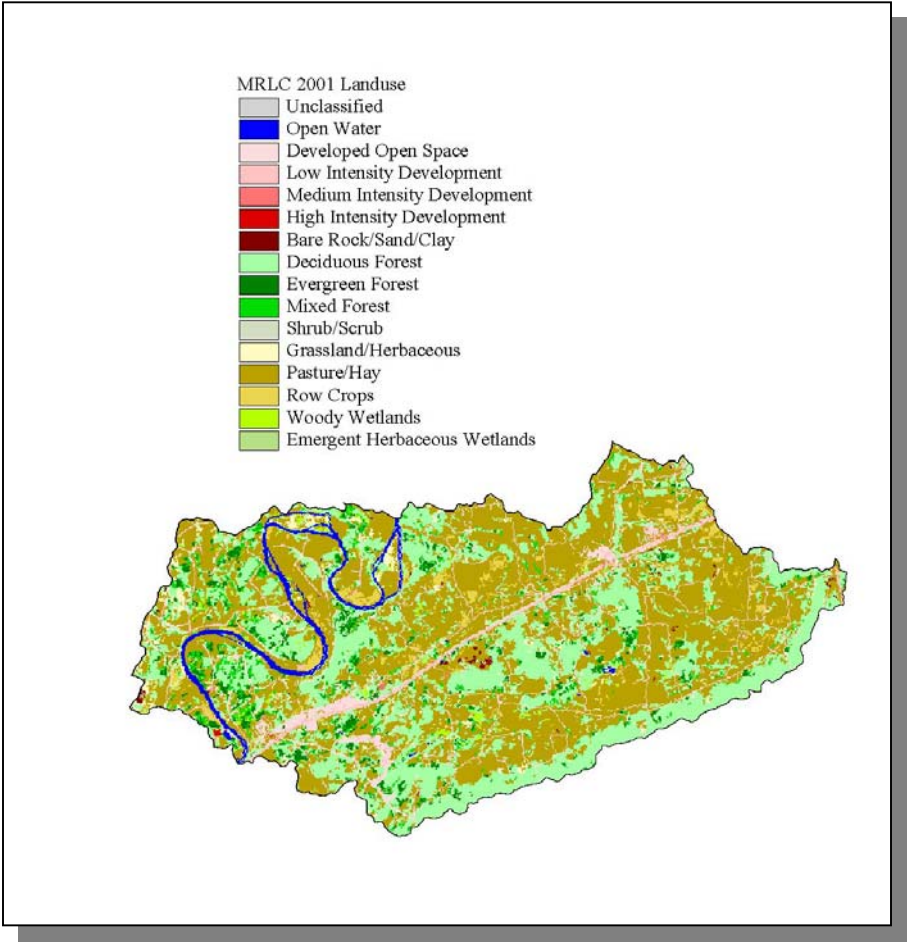


Figure 4-145. Illustration of Land Use Distribution in Subwatershed 060101040302.

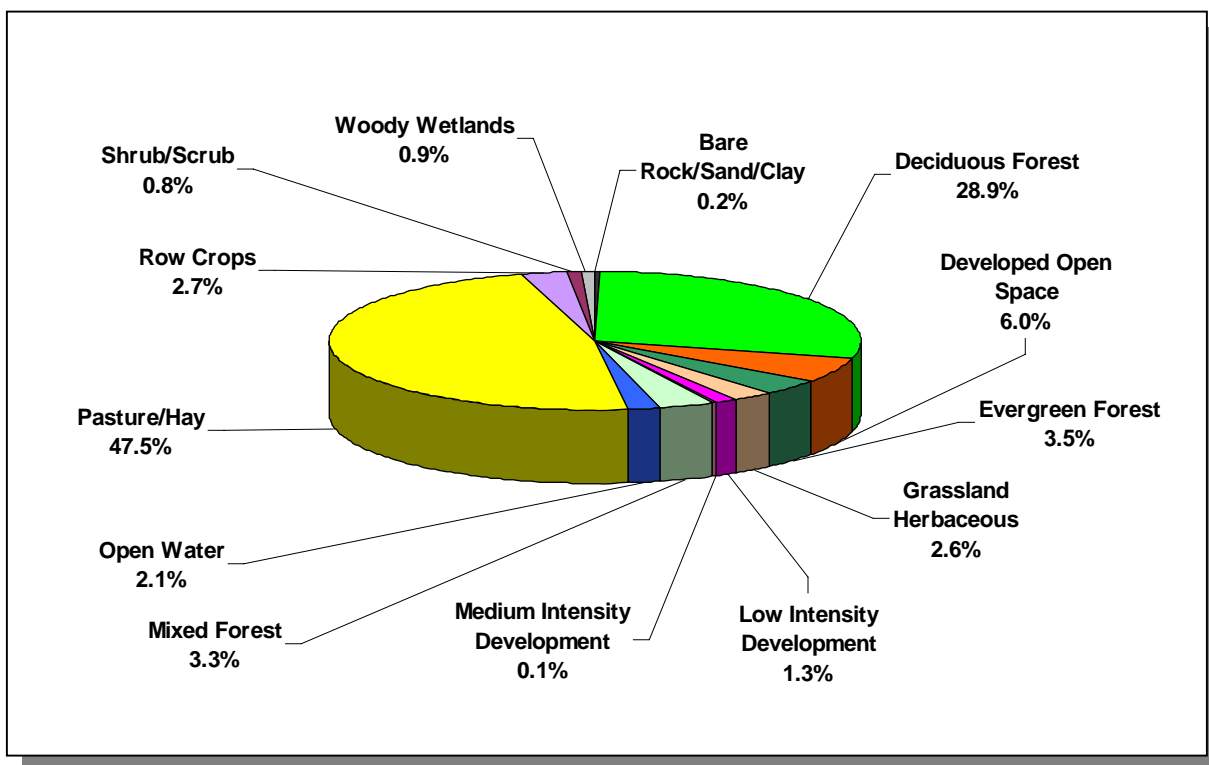


Figure 4-146. Land Use Distribution in Subwatershed 060101040302. More information is provided in Appendix IV.

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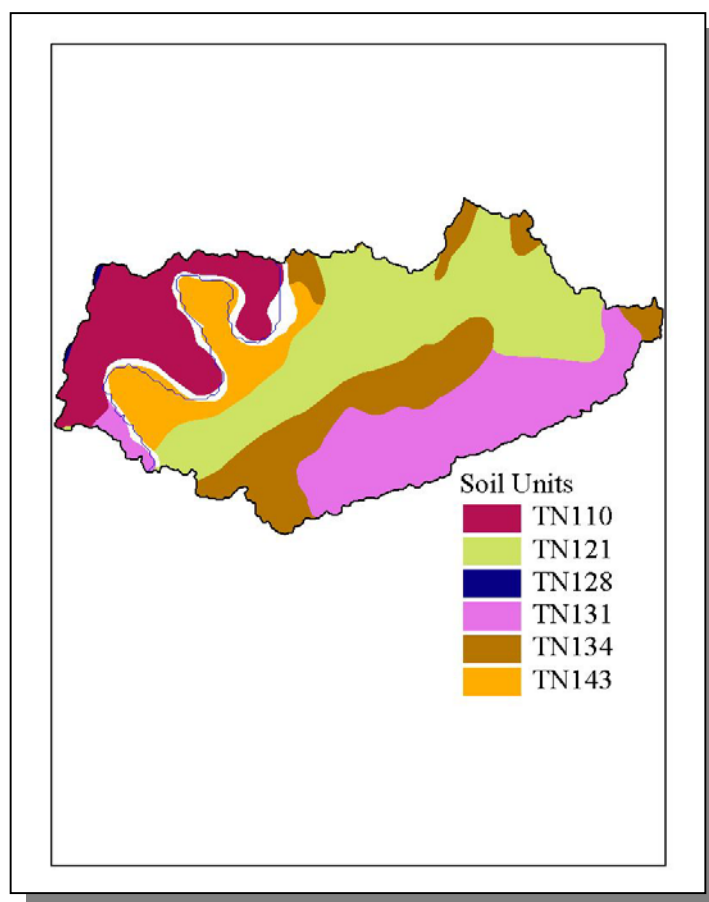


Figure 4-147. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040302.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN110	0.00	B	2.22	4.96	Loam	0.31
TN121	0.00	B	1.30	5.21	Loam	0.33
TN128	0.00	C	1.30	6.53	Clayey Loam	0.26
TN131	0.00	C	1.17	4.95	Silty Loam	0.33
TN134	0.00	B	1.38	5.18	Loam	0.31
TN143	0.00	C	1.22	6.44	Loam	0.32

Table 4-116. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040302. The definition of "Hydrologic Group" is provided in Appendix IV.

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County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-2000)
	1990	1997	2000		1990	1997	2000	
Grainger	17,095	19,456	20,659	2.15	367	417	443	20.7
Jefferson	33,016	42,168	44,294	16.5	5,448	6,959	7,309	34.2
Knox	335,749	365,900	382,032	1.38	4,642	5,059	5,282	13.8
Sevier	51,043	62,774	71,170	0.05	26	32	37	42.3
Total	436,903	490,298	518,155		10,483	12,467	13,071	24.7

Table 4-117. Population Estimates in Subwatershed 060101040302.

Populated Place	County	Population	NUMBER OF HOUSING UNITS			
			Total	Public Sewer	Septic Tank	Other
Jefferson City	Jefferson	5,494	2,006	1,922	84	0
New Market	Jefferson	1,086	412	13	395	4
Blaine	Grainger	1,326	505	9	473	23
Total		7,908	2,923	1,944	952	27

Table 4-118. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 060101040302.

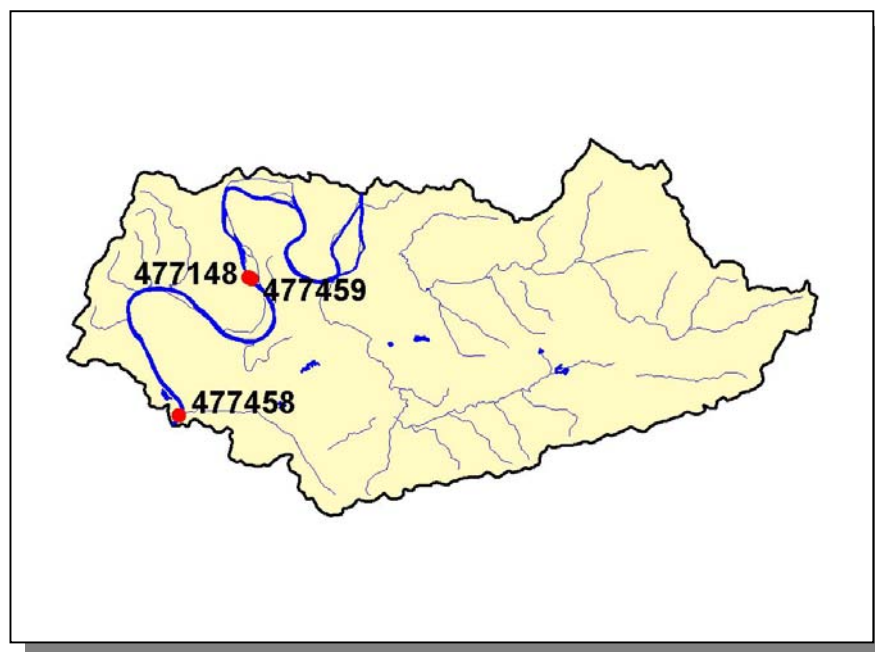


Figure 4-148. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 060101040302. More information, including site names and locations, is provided in Appendix IV.

4.2.C.ii.a. Point Source Contributions.

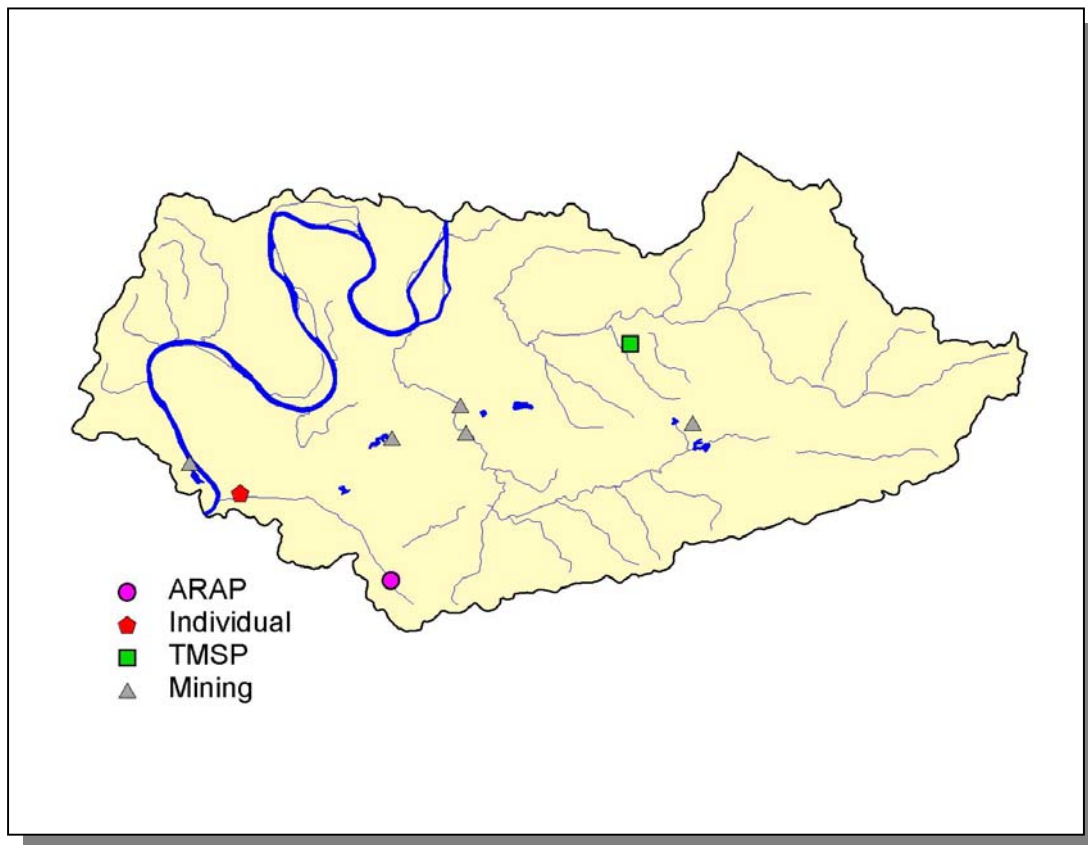


Figure 4-149. Location of Permits Issued in Subwatershed 060101040302. More information, including the names of facilities, is provided in Appendix IV.

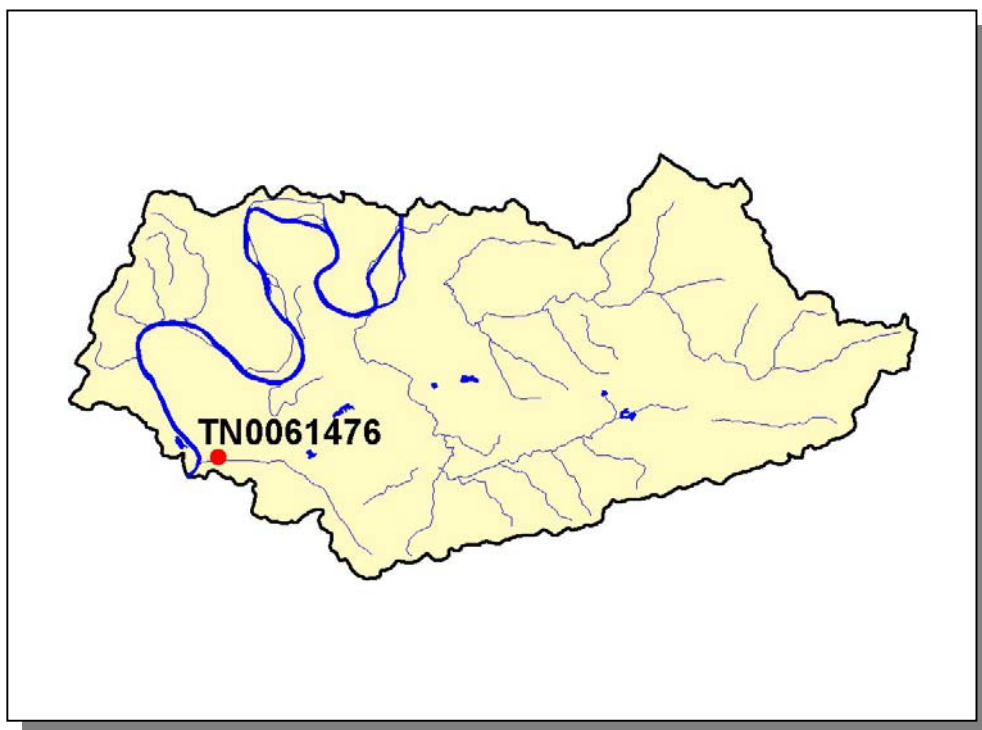


Figure 4-150. Location of Active NPDES Sites in Subwatershed 060101040302. More information, including the names of facilities, is provided in Appendix IV.

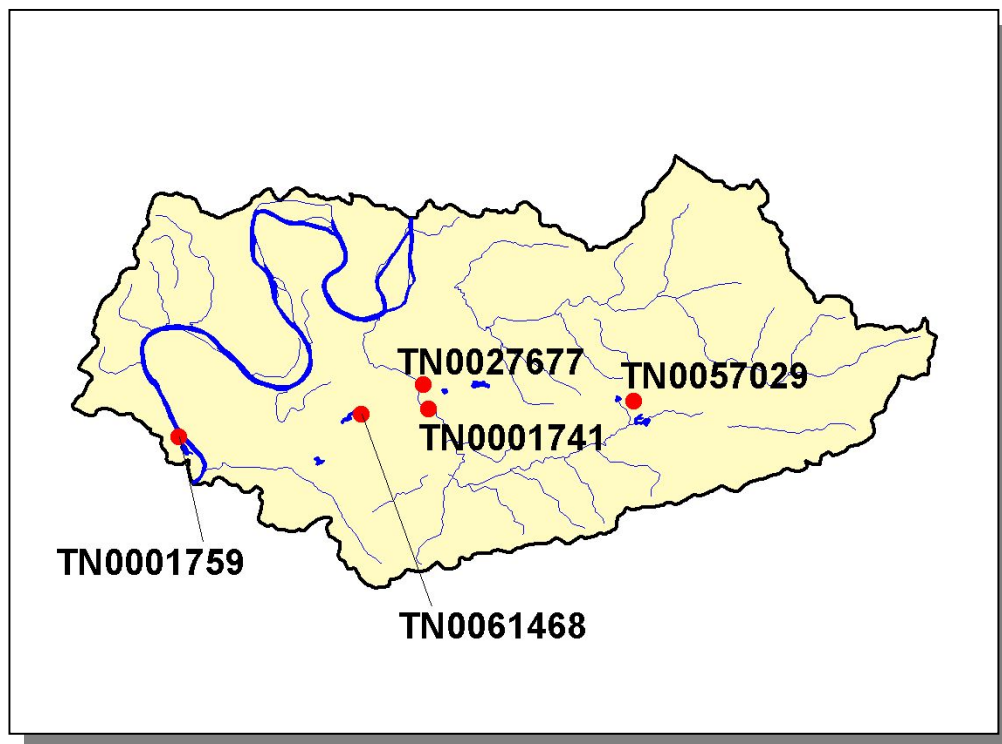


Figure 4-151. Location of Active Mining Sites in Subwatershed 060101040302. More information, including the names of mining operations, is provided in Appendix IV.

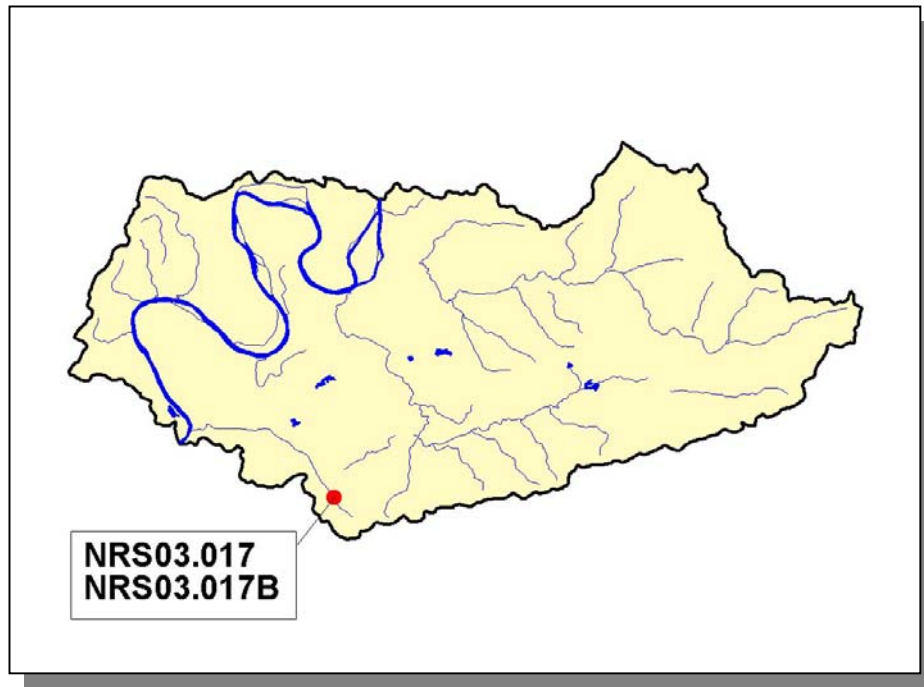


Figure 4-152. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 060101040302. More information is provided in Appendix IV.

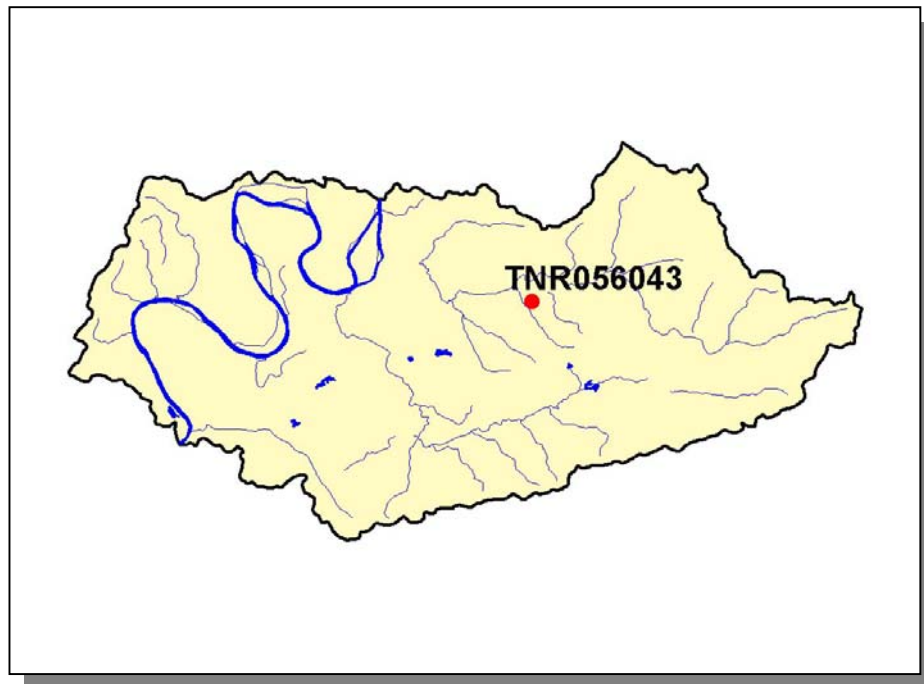


Figure 4-153. Location of TMSP Sites in Subwatershed 060101040302. More information, including the names of facilities, is provided in Appendix IV.

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4.2.C.ii.b. Nonpoint Source Contributions.

LIVESTOCK (COUNTS)						
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
4,023	8,722	433	7	375,189	82	142

Table 4-119. Summary of Livestock Count Estimates in Subwatershed 060101040302. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

LIVESTOCK COUNTS							
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
Grainger	12,115	23,927	942	1,184	0	510	195
Jefferson	16,126	35,718	1,878	1,633	1,880,000	183	567
Knox	12,424	24,664	855	2,056	0	851	649
Sevier	9,816	19,013	172	26	1,572,010	394	234

Table 4-120. Summary of Livestock Count Estimates in Grainger, Jefferson, Knox, and Sevier Counties. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

County	INVENTORY		REMOVAL RATE	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Grainger	102.6	102.6	0.3	1.8
Jefferson	62.2	62.2	0.6	1.8
Knox	127.5	127.0	2.2	8.2
Sevier	254.5	127.4	0.3	0.9

Table 4-121. Forest Acreage and Annual Removal Rates (1987-1994) in Grainger, Jefferson, Knox, and Sevier Counties.

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CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.64
Grass (Hayland)	0.23
Legumes, Grass (Hayland)	0.38
Grass, Forbs, Legumes (Mixed Pasture)	0.48
Corn (Row Crops)	18.63
Soybeans (Row Crops)	15.54
Tobacco (Row Crops)	3.53
Oats (Close-Grown Cropland)	13.51
Summer Fallow (Other Cropland)	3.31
Farmsteads and Ranch Headquarters	0.07

Table 4-122. Annual Estimated Total Soil Loss in Subwatershed 060101040302.

4.2.C.iii. 060101040303 (Richland Creek).

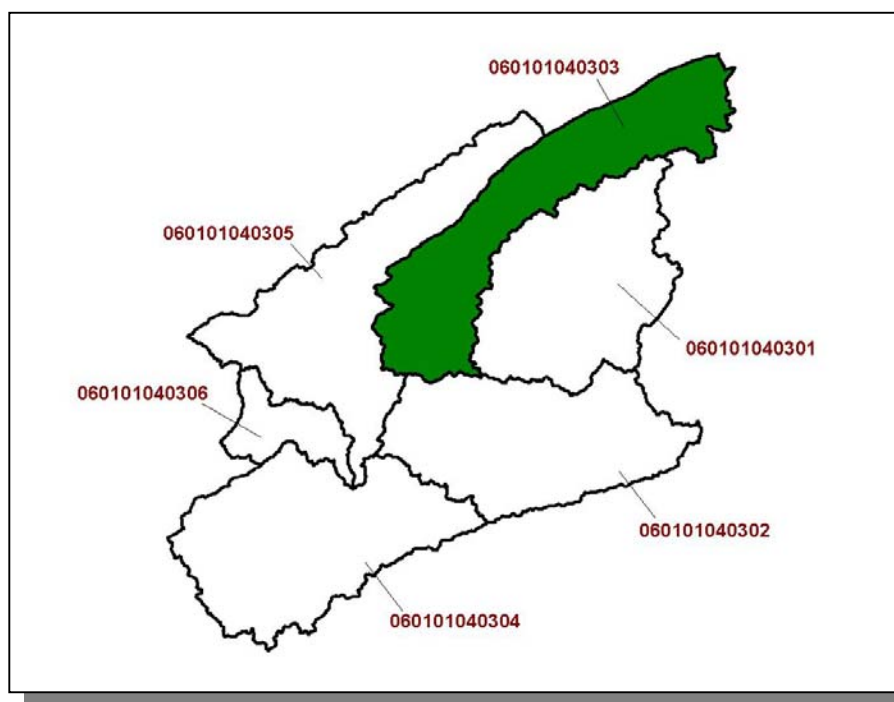


Figure 4-154. Location of Subwatershed 060101040303. All HUC-12 subwatershed boundaries are shown for reference.

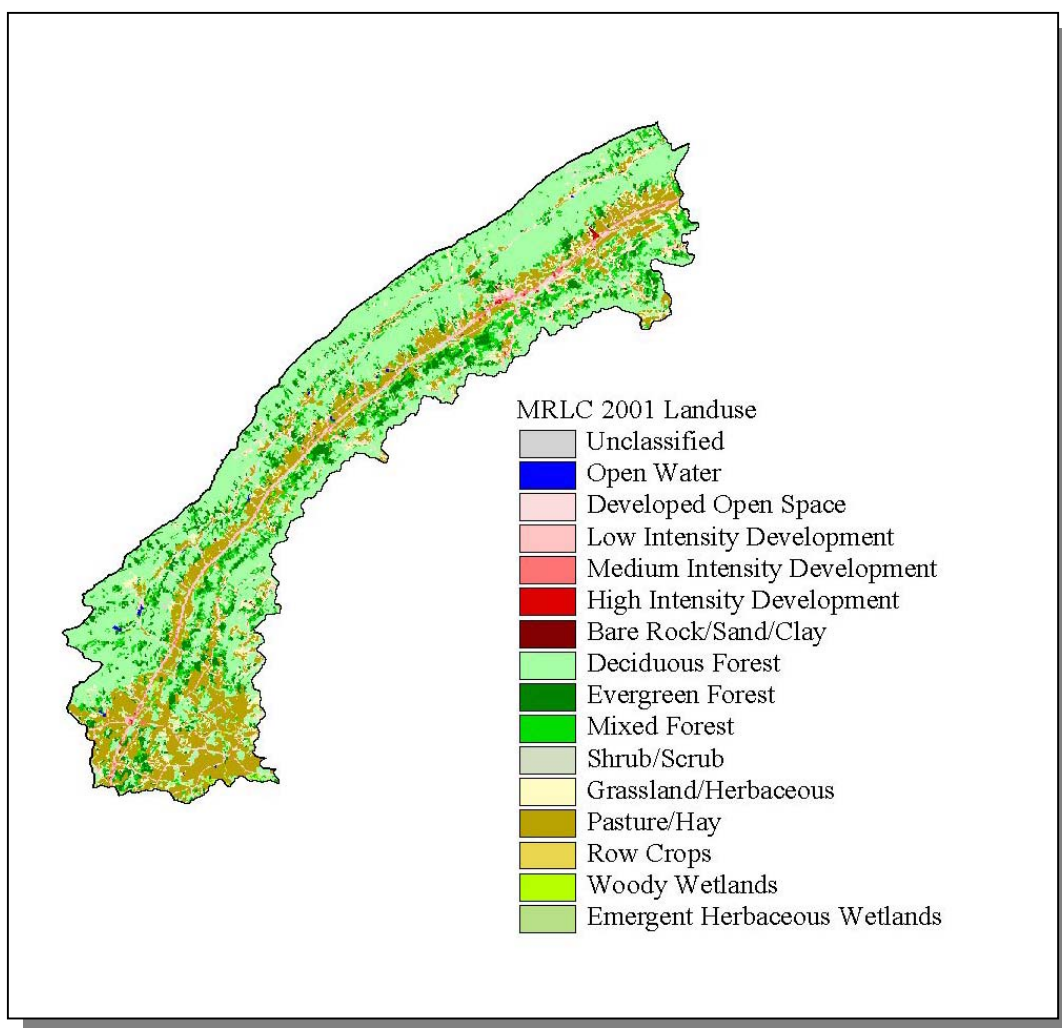


Figure 4-155. Illustration of Land Use Distribution in Subwatershed 060101040303.

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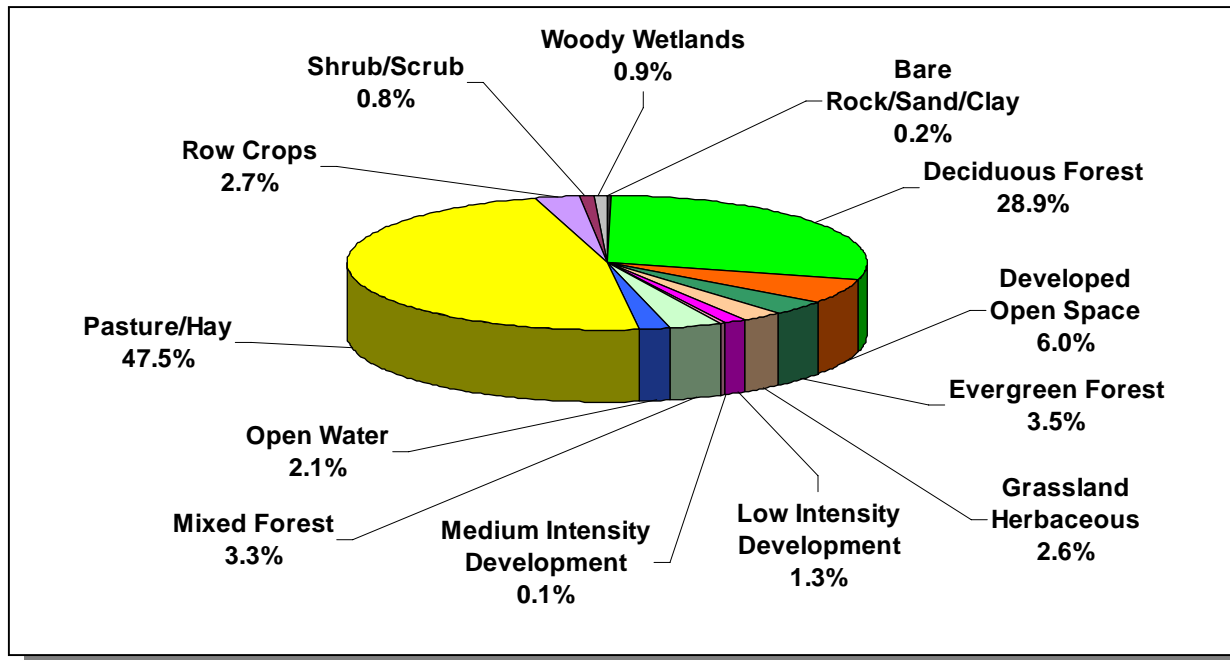


Figure 4-156. Land Use Distribution in Subwatershed 060101040303. More information is provided in Appendix IV.

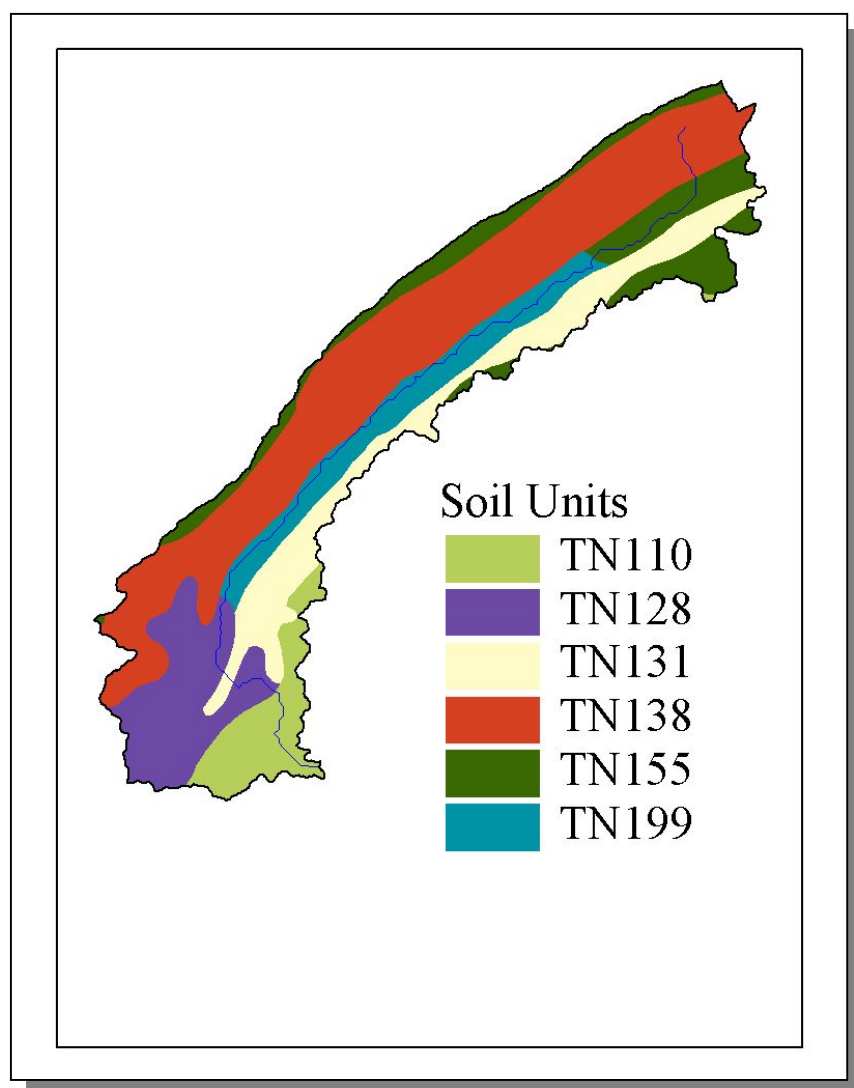


Figure 4-157. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040303.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN110	0.00	B	2.22	4.96	Loam	0.31
TN128	0.00	C	1.30	6.53	Clayey Loam	0.26
TN131	0.00	C	1.17	4.95	Silty Loam	0.33
TN138	0.00	C	2.48	4.26	Sandy Loam	0.22
TN155	0.00	C	1.71	5.31	Loam	0.32
TN199	3.00	C	1.22	4.75	Silty Loam	0.30

Table 4-123. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040303. The definition of "Hydrologic Group" is provided in Appendix IV.

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County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-2000)
	1990	1997	2000		1990	1997	2000	
Grainger	17,095	19,456	20,659	21.78	3,724	4,238	4,500	20.8
Knox	335,749	365,900	382,032	0.02	60	66	69	15.0
Total	352,844	385,356	402,691		3,784	4,304	4,569	20.8

Table 4-124. Population Estimates in Subwatershed 060101040303.

Populated Place	County	Population	NUMBER OF HOUSING UNITS			
			Total	Public Sewer	Septic Tank	Other
Blaine	Grainger	1,326	505	9	473	23
Rutledge	Grainger	878	369	213	151	5
Total		2,204	874	222	624	28

Table 4-125. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 060101040303.



Figure 4-158. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 060101040303. More information, including site names and locations, is provided in Appendix IV.

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4.2.C.iii.a. Point Source Contributions.

There are no point source contributions in this subwatershed.

4.2.C.iii.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
2,082	4,112	162	6	88	34

Table 4-126. Summary of Livestock Count Estimates in Subwatershed 060101040303. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.

LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Grainger	12,115	23,927	942	1,184	510	195
Knox	12,424	24,664	855	2,056	851	649
Union	5,540	10,575	105	981	93	96

Table 4-127. Summary of Livestock Count Estimates in Grainger, Knox, and Union Counties. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.

County	INVENTORY		REMOVAL RATE	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Grainger	102.6	102.6	0.3	1.8
Knox	127.5	127.0	2.2	8.2
Union	102.5	102.5	0.1	0.0

Table 4-128. Forest Acreage and Annual Removal Rates (1987-1994) in Grainger, Knox, and Union Counties.

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CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	1.00
Grass (Hayland)	0.32
Legumes, Grass (Hayland)	0.60
Grass, Forbs, Legumes (Mixed Pasture)	0.84
Corn (Row Crops)	5.68
Soybeans (Row Crops)	15.54
Wheat (Close-Grown Cropland)	4.44
Tobacco (Close-Grown Cropland)	7.21
Farmsteads and Ranch Headquarters	0.52

Table 4-129. Annual Estimated Total Soil Loss in Subwatershed 060101040303.

4.2.C.iv. 060101040304 (Holston River).

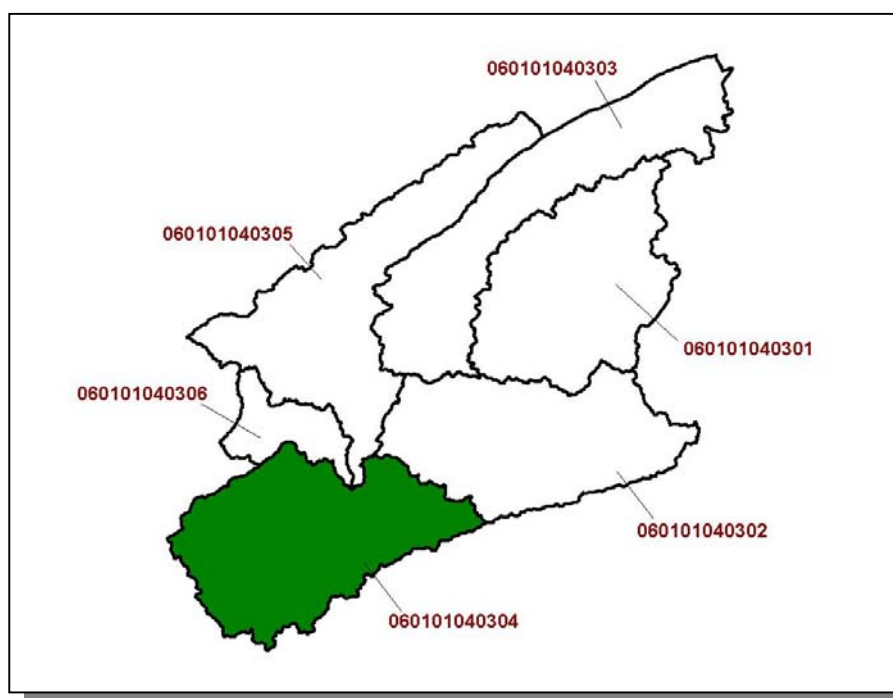


Figure 4-159. Location of Subwatershed 060101040304. All HUC-12 subwatershed boundaries are shown for reference.

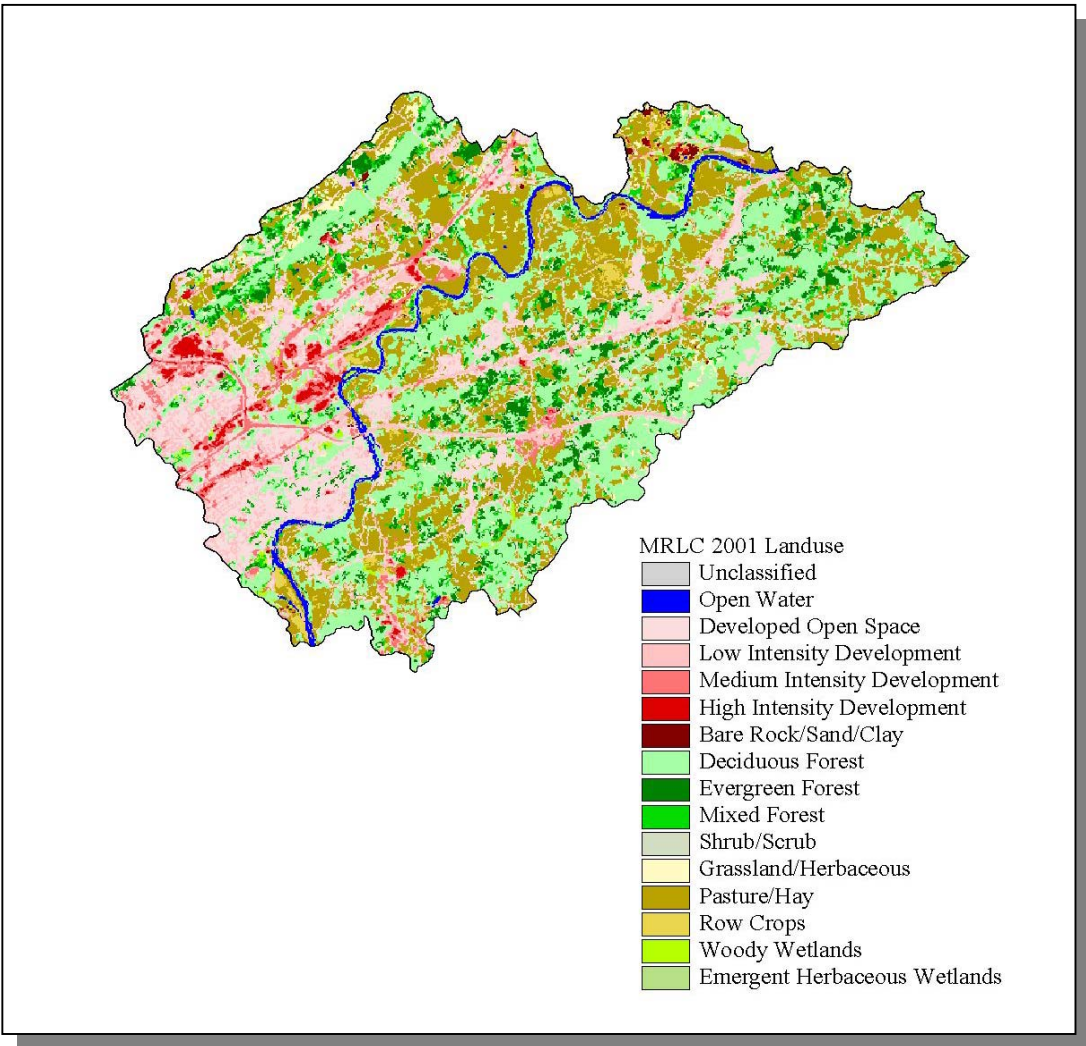


Figure 4-160. Illustration of Land Use Distribution in Subwatershed 060101040304.

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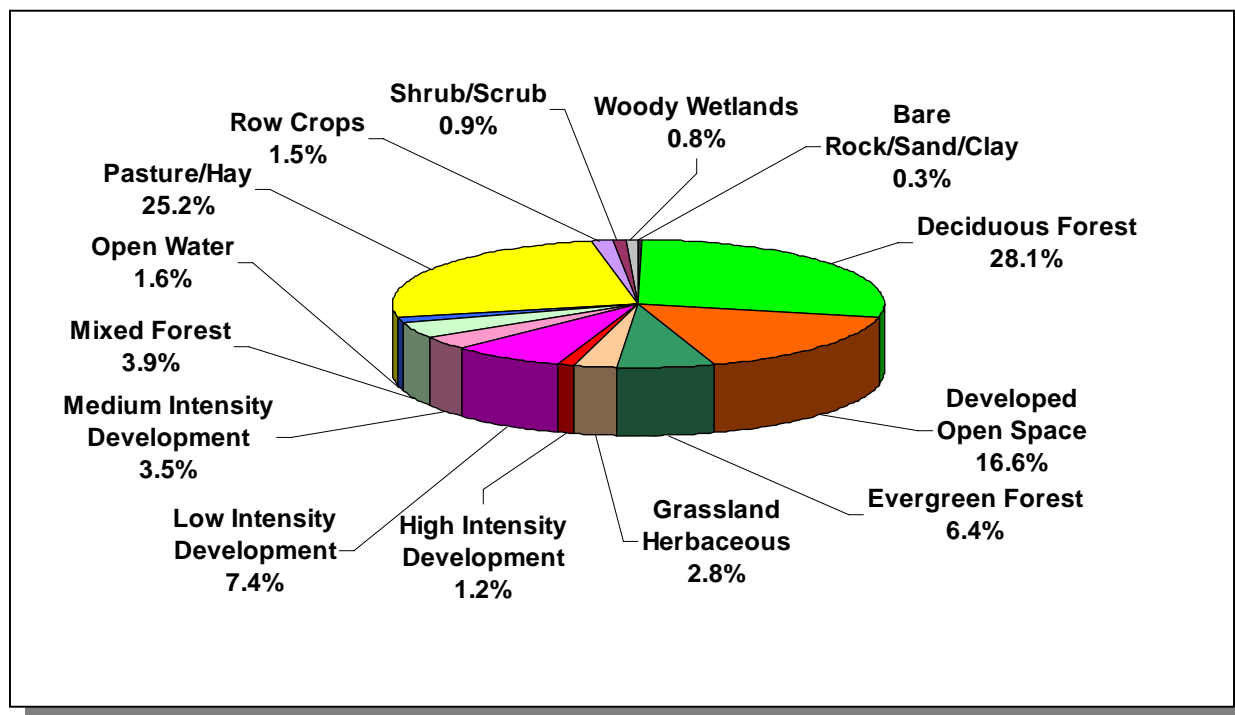


Figure 4-161. Land Use Distribution in Subwatershed 060101040304. More information is provided in Appendix IV.

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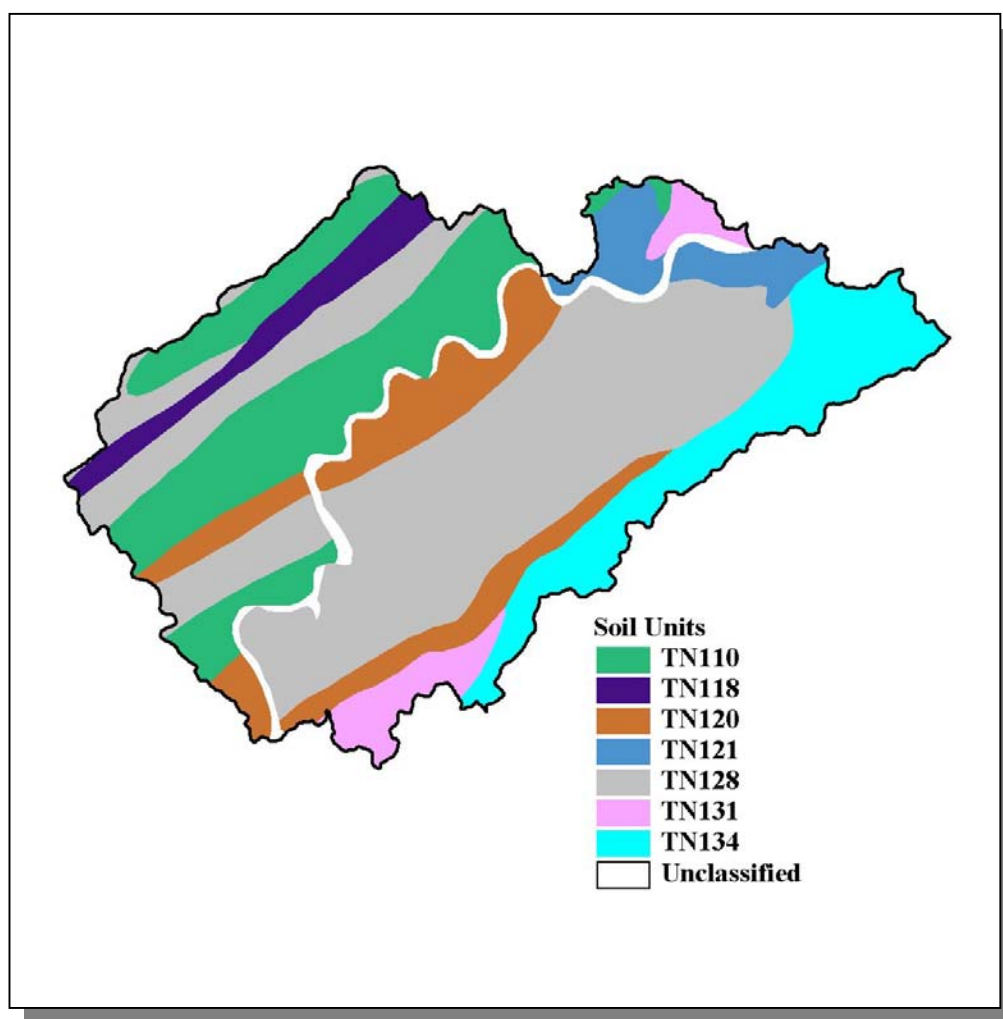


Figure 4-162. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040304.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN110	0.00	B	2.22	4.96	Loam	0.31
TN118	0.00	C	6.52	5.12	Loam	0.29
TN120	0.00	B	1.58	5.11	Loam	0.27
TN121	0.00	B	1.30	5.21	Loam	0.33
TN128	0.00	C	1.30	6.53	Clayey Loam	0.26
TN131	0.00	C	1.17	4.95	Silty Loam	0.33
TN134	0.00	B	1.38	5.18	Loam	0.31

Table 4-130. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040304. The definition of "Hydrologic Group" is provided in Appendix IV.

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County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-2000)
	1990	1997	2000		1990	1997	2000	
Jefferson	33,016	42,168	44,294	0.04	13	16	17	30.8
Knox	335,749	365,900	382,032	13.15	44,144	48,108	50,229	13.8
Sevier	51,043	62,774	71,170	0.22	114	140	159	39.5
Total	419,808	470,842	497,496		44,271	48,264	50,405	13.9

Table 4-131. Population Estimates in Subwatershed 060101040304.

Populated Place	County	Population	NUMBER OF HOUSING UNITS			
			Total	Public Sewer	Septic Tank	Other
Knoxville	Knox	165,121	76,453	74,884	1,521	48

Table 4-132. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 060101040304.

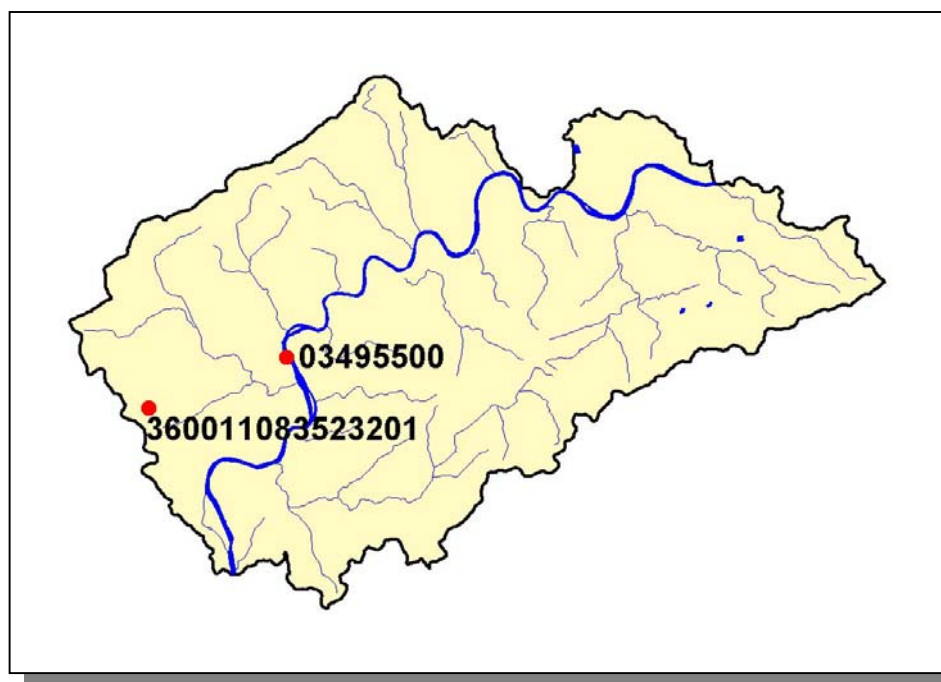


Figure 4-163. Location of Historical Streamflow Data Collection Sites in Subwatershed 060101040304. More information is provided in Appendix IV.

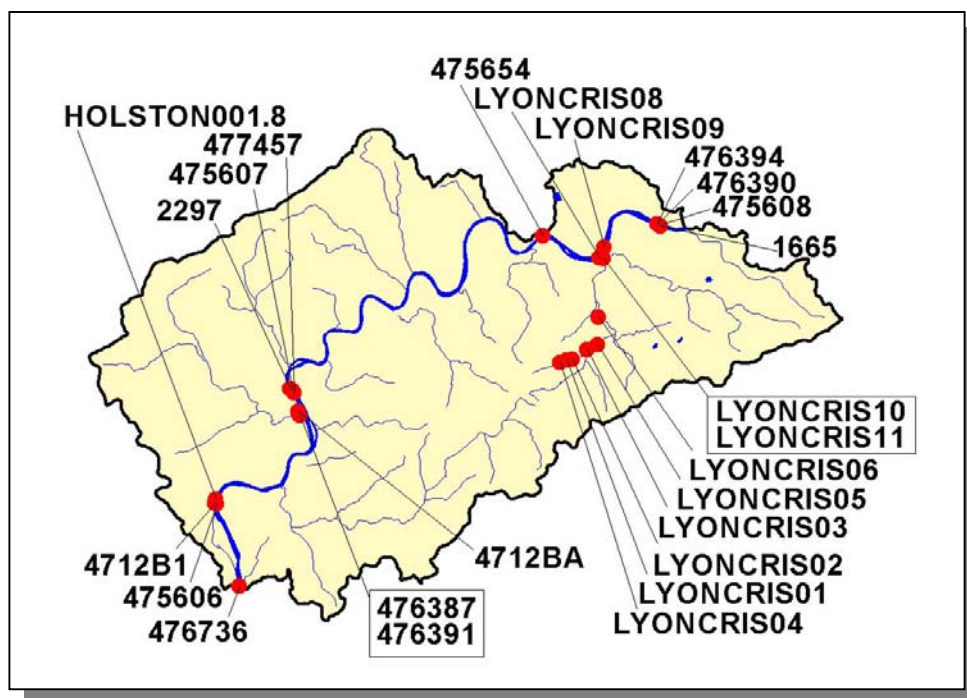


Figure 4-164. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 060101040304. More information, including site names and locations, is provided in Appendix IV.

4.2.C.iv.a. Point Source Contributions.

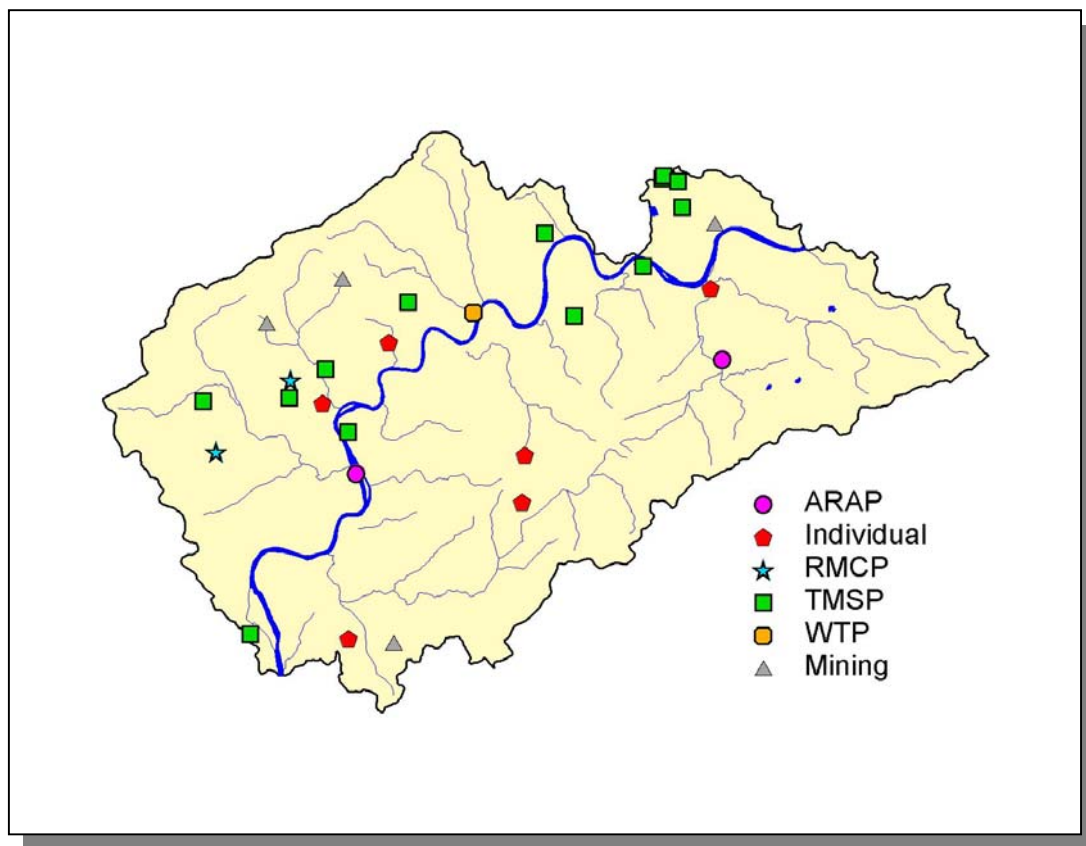


Figure 4-165. Location of Permits Issued in Subwatershed 060101040304. More information, including the names of facilities, is provided in Appendix IV.

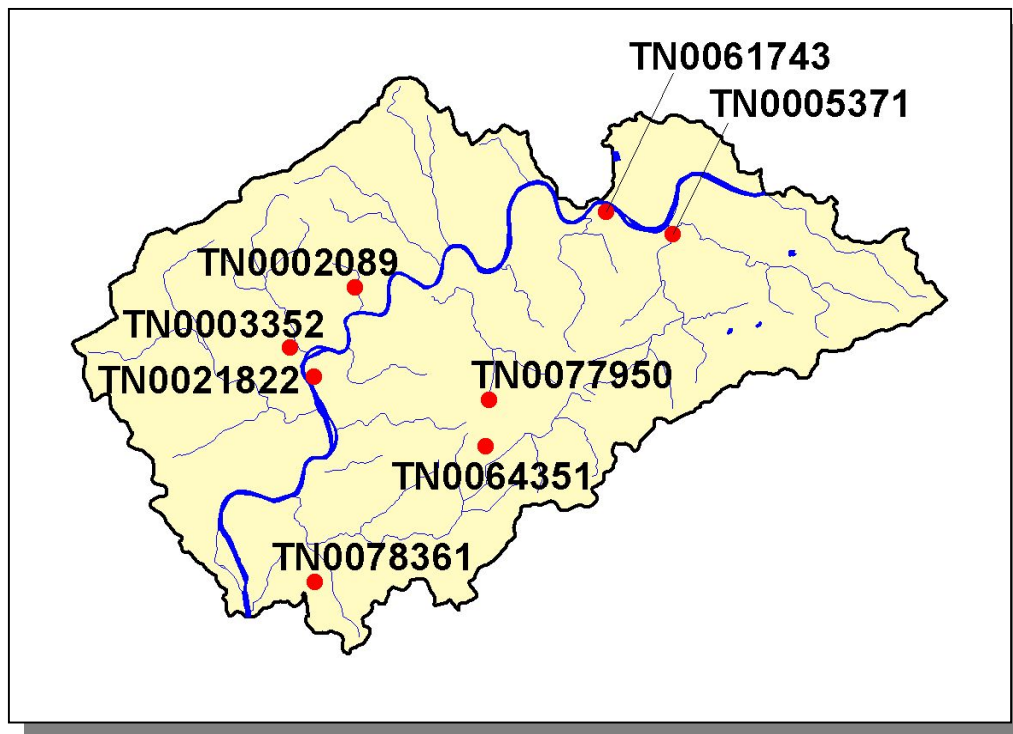


Figure 4-166. Location of Active NPDES Sites in Subwatershed 060101040304. More information, including the names of facilities, is provided in Appendix IV.

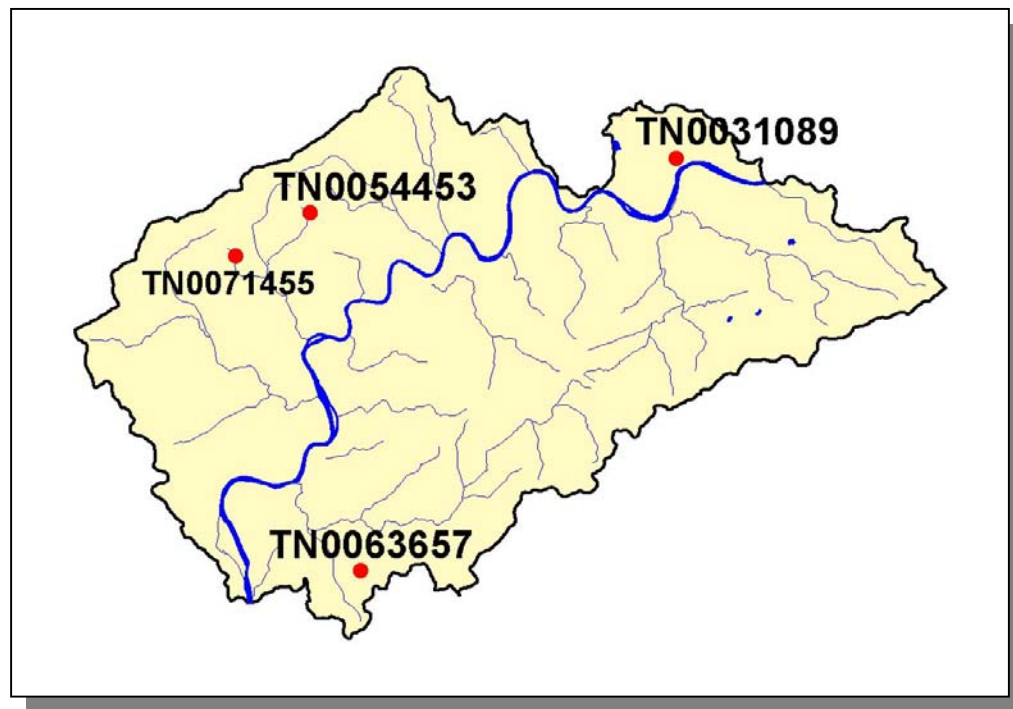


Figure 4-167. Location of Mining Sites in Subwatershed 060101040304. More information, including the names of mining operations, is provided in Appendix IV.

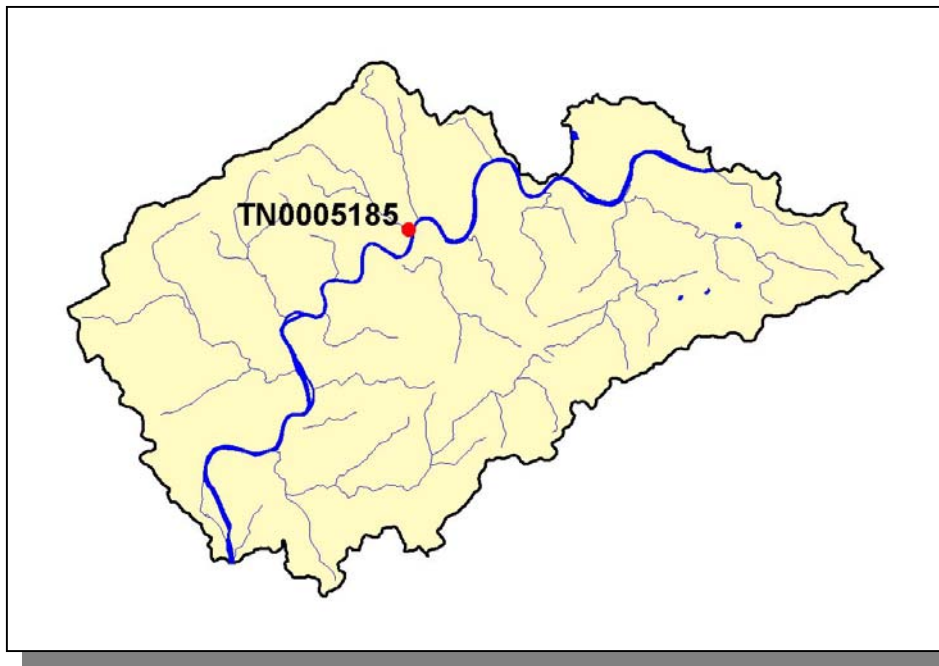


Figure 4-168. Location of Water Treatment Plants in Subwatershed 060101040304. More information, including the names of facilities, is provided in Appendix IV.

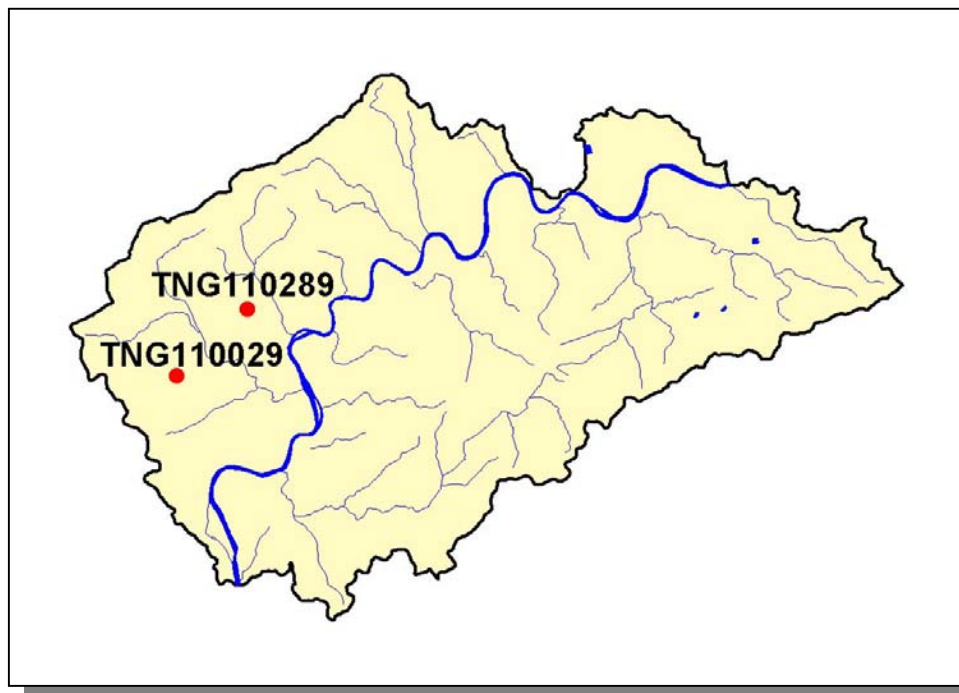


Figure 4-169. Location of Ready Mix Concrete Plants (RMCP) in Subwatershed 060101040304. More information is provided in Appendix IV.

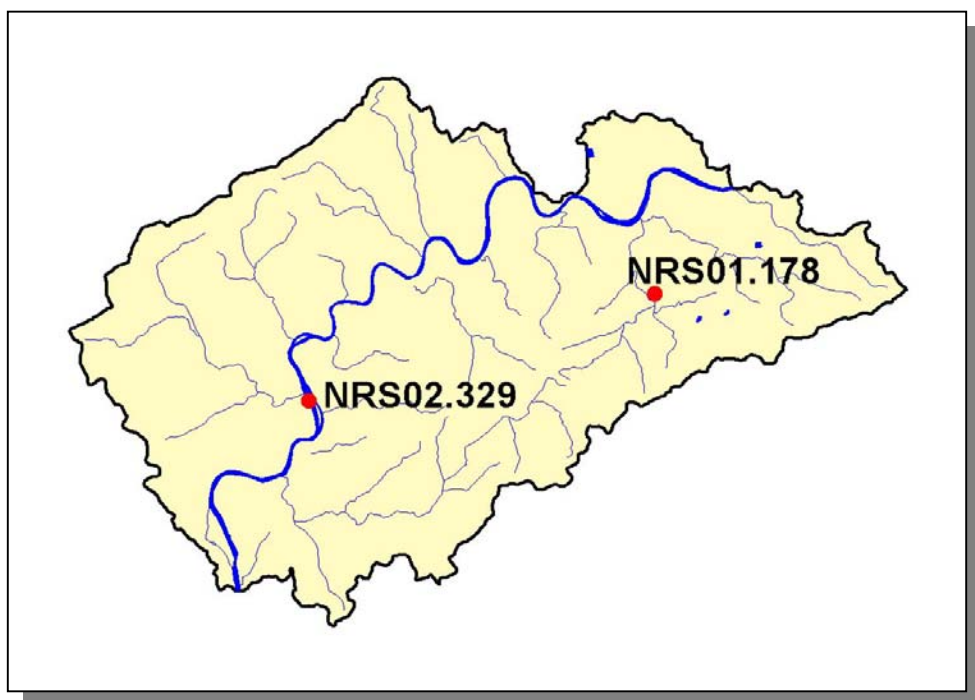


Figure 4-170. Location of Aquatic Resource Alteration Permit (ARAP) Sites (Individual Permits) in Subwatershed 060101040304. More information is provided in Appendix IV.

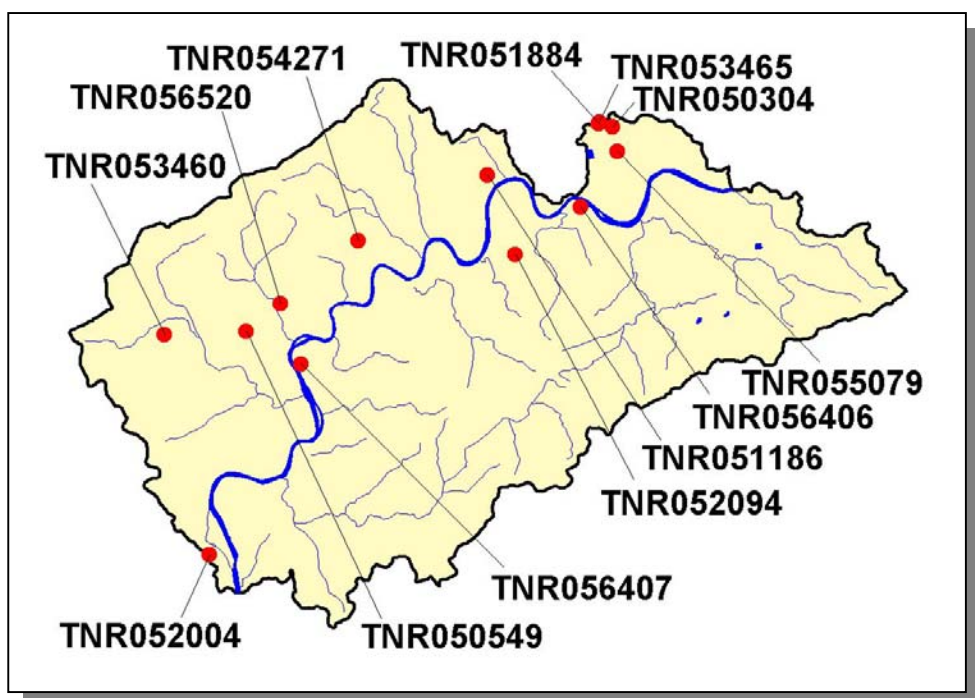


Figure 4-171. Location of TMRP Sites in Subwatershed 060101040304. More information, including the names of facilities, is provided in Appendix IV.

4.2.C.iv.a.i. Dischargers to Water Bodies Listed on the 2004 303(d) List

There are three NPDES facilities discharging to water bodies listed on the 2004 303(d) list in Subwatershed 060101040304:

- TN0064351 (Pilot Travel Centers) discharges to Pratt Branch @ RM 0.2
- TN0077950 (Kwik-Shop #398) discharges to Pratt Branch @ RM 1.0
- TN0078361 (Aqua Chem, Inc.) discharges to Sand Branch

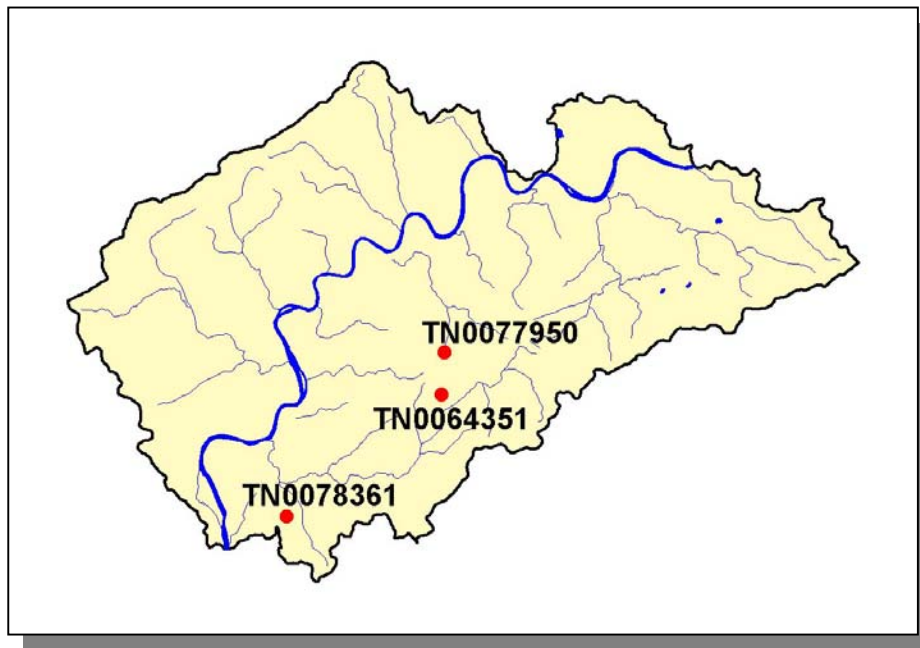


Figure 4-172. Location of NPDES Dischargers to Water Bodies Listed on the 2004 303(d) List in Subwatershed 060101040304. More information, including the names of facilities, is provided in Appendix IV.

PERMIT #	1Q10	3Q10	7Q10	3Q20	QDESIGN
TN0064351					
TN0077950					
TN0078361					

Table 4-133. Receiving Stream Flow Information for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 060101040304. Data are in million gallons per day (MGD). Data were obtained from the USGS publication Flow Duration and Low Flows of Tennessee Streams Through 1992 or from permit files.

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PERMIT #	BENZENE	MBAS	VISIBLE OIL	NO ₃ +NO ₂	Zn	Al	TEMPERATURE	FLOW
TN0064351	X	X	X					
TN0077950	X							X
TN0078361				X	X	X	X	X

Table 4-134. Monitoring Requirements for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 060101040304. MBAS, Methylene-blue-active-substances.

PERMIT #	CBOD ₅	Zn	Al	TSS	SETTLEABLE SOLIDS	Oil and GREASE	DO	pH
TN0064351	X	X		X	X	X		X
TN0077950				X		X		X
TN0078361				X		X	X	X

Table 4-135. Parameters Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 060101040304. WET, Whole Effluent Toxicity; CBOD₅, Carbonaceous Biochemical Oxygen Demand (5-Day); TSS, Total Suspended Solids.

4.2.C.iv.b. Nonpoint Source Contributions.

LIVESTOCK (COUNTS)						
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
2,804	5,566	190	7	12,403	190	144

Table 4-136. Summary of Livestock Count Estimates in Subwatershed 060101040304. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

LIVESTOCK COUNTS							
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Chickens (Broilers Sold)	Hogs	Sheep
Jefferson	16,126	35,718	1,878	1,633	1,880,000	183	567
Knox	12,424	24,664	855	2,056	0	851	649
Sevier	9,816	19,013	172	26	1,572,010	394	234

Table 4-137. Summary of Livestock Count Estimates in Jefferson, Knox, and Sevier Counties. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older; "Chickens Sold" are all chickens used to produce meat.

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County	INVENTORY		REMOVAL RATE	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Jefferson	62.2	62.2	0.6	1.8
Knox	127.5	127.0	2.2	8.2
Sevier	254.5	127.4	0.3	0.9

Table 4-138. Forest Acreage and Annual Removal Rates (1987-1994) in Jefferson, Knox, and Sevier Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.89
Grass (Hayland)	0.12
Legumes, Grass (Hayland)	0.24
Grass, Forbs, Legumes (Mixed Pasture)	0.47
Corn (Row Crops)	1.21
Tobacco (Row Crops)	15.24
Soybeans (Row Crops)	15.54
Wheat (Close-Grown Cropland)	4.54
Oats (Close-Grown Cropland)	13.51
Summer Fallow (Other Cropland)	3.31
Farmsteads and Ranch Headquarters	0.18

Table 4-139. Annual Estimated Total Soil Loss in Subwatershed 060101040304.

4.2.C.v. 060101040305 (Flat Creek).

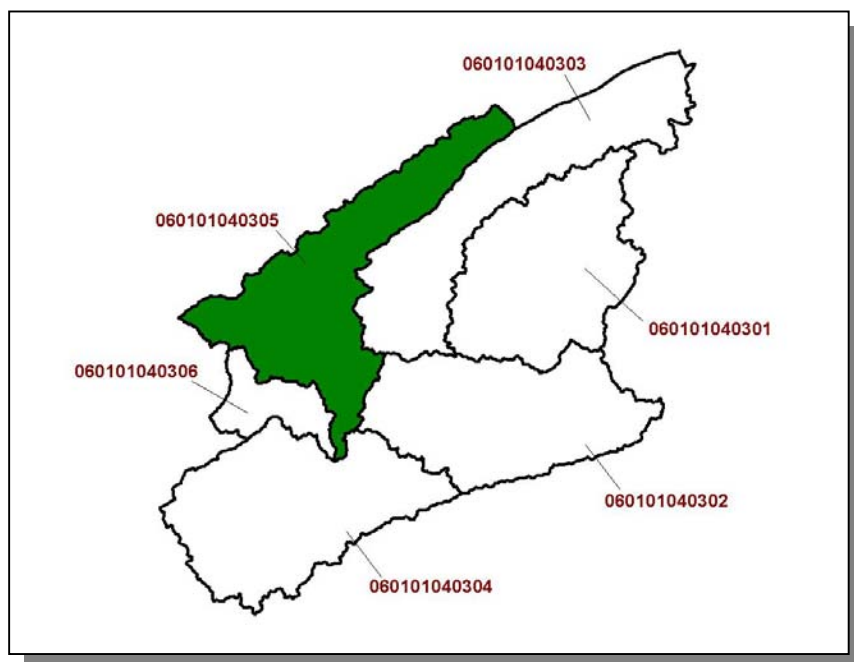


Figure 4-173. Location of Subwatershed 060101040305. All HUC-12 subwatershed boundaries are shown for reference.

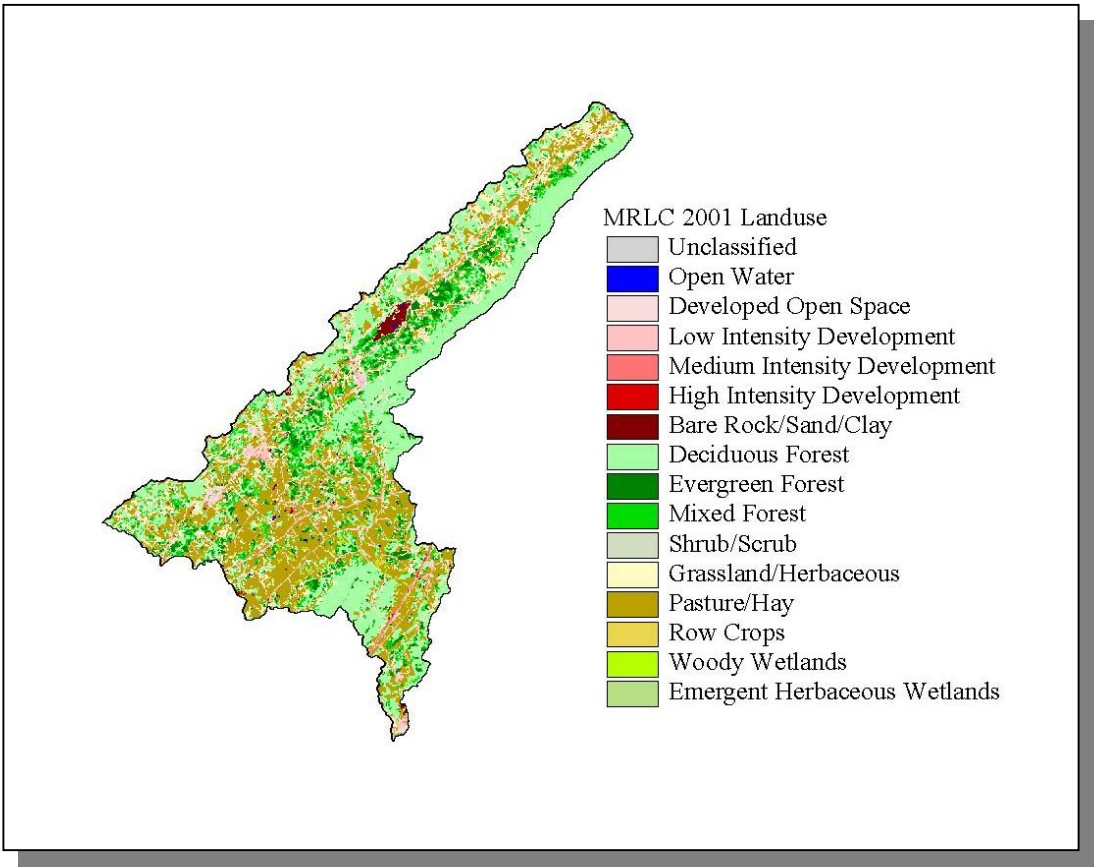


Figure 4-174. Illustration of Land Use Distribution in Subwatershed 060101040305.

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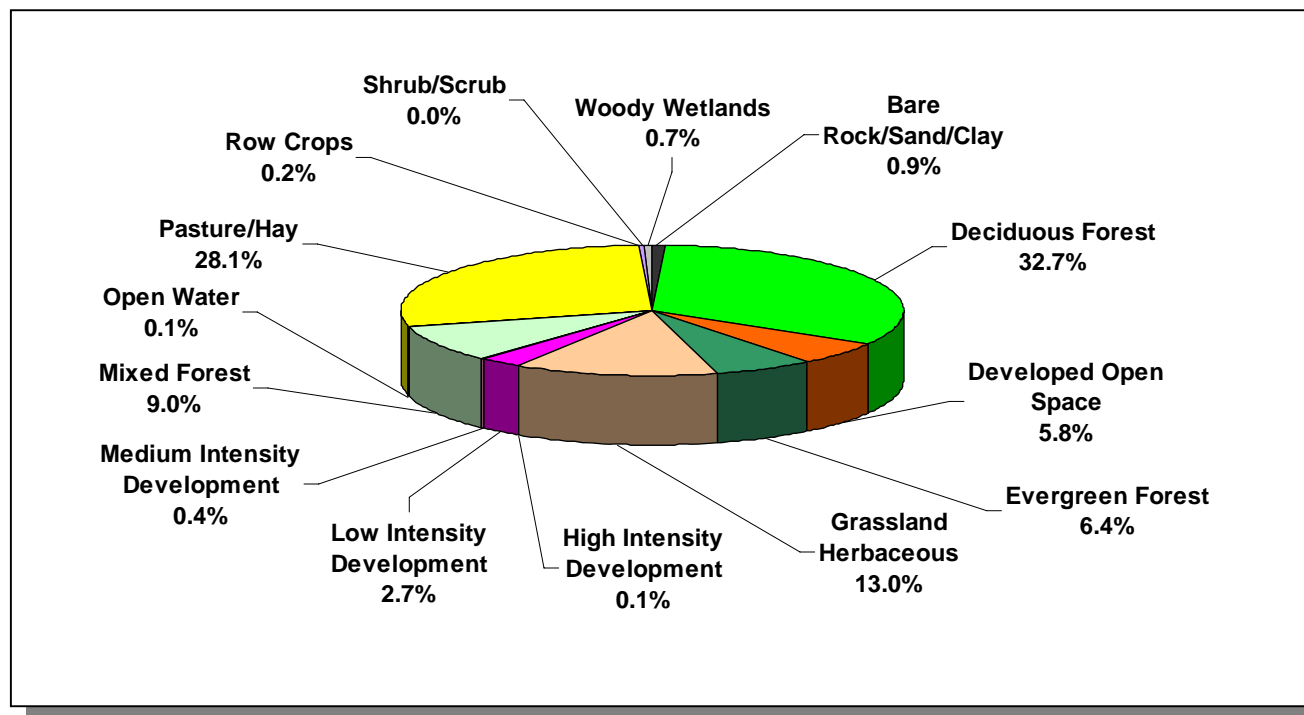


Figure 4-175. Land Use Distribution in Subwatershed 060101040305. More information is provided in Appendix IV.

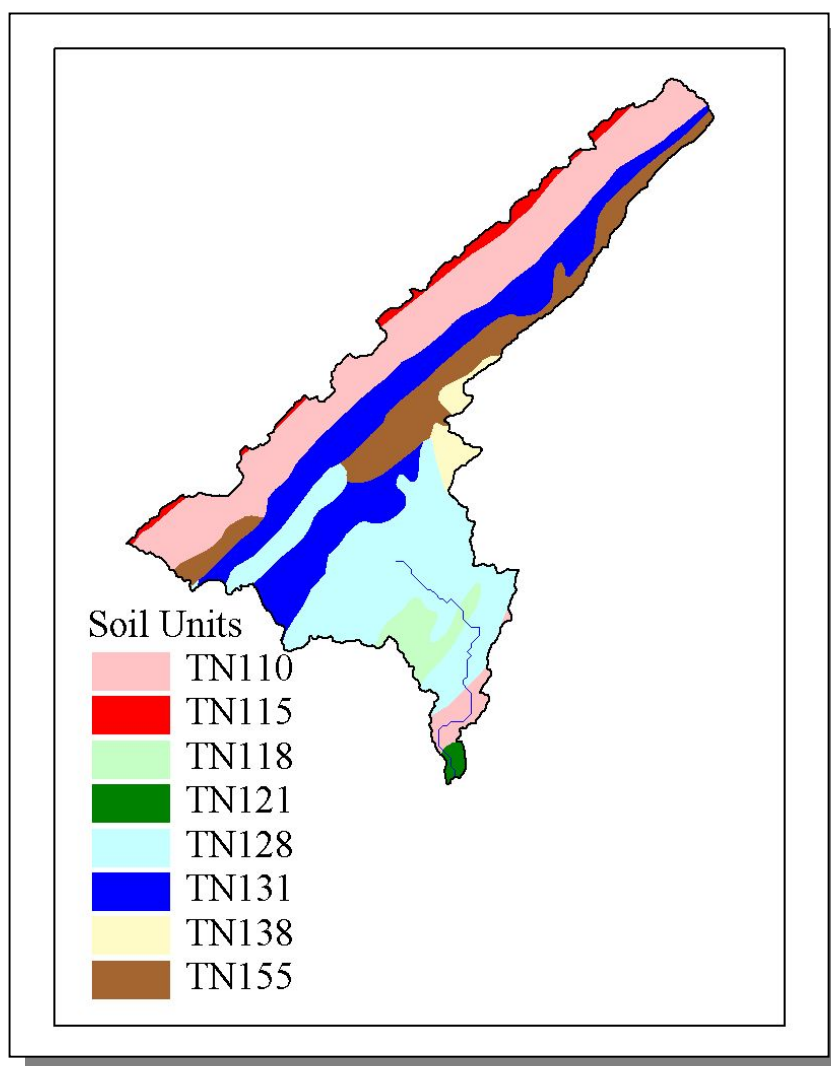


Figure 4-176. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040305.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN110	0.00	B	2.22	4.96	Loam	0.31
TN115	0.00	C	1.41	5.15	Silty Loam	0.36
TN118	0.00	C	6.52	5.12	Loam	0.29
TN121	0.00	B	1.30	5.21	Loam	0.33
TN128	0.00	C	1.30	6.53	Clayey Loam	0.26
TN131	0.00	C	1.17	4.95	Silty Loam	0.33
TN138	0.00	C	2.48	4.26	Sandy Loam	0.22

Table 4-140. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040305. The definition of "Hydrologic Group" is provided in Appendix IV.

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County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-2000)
	1990	1997	2000		1990	1997	2000	
Grainger	17,095	19,456	20,659	5.17	885	1,007	1,069	20.8
Knox	335,749	365,900	382,032	6.24	20,956	22,838	23,845	13.8
Union	13,694	15,956	17,808	8.29	1,135	1,322	1,476	30.0
Total	366,538	401,312	420,499		22,976	25,167	26,390	14.9

Table 4-141. Population Estimates in Subwatershed 060101040305.

Populated Place	County	Population	NUMBER OF HOUSING UNITS			
			Total	Public Sewer	Septic Tank	Other
Luttrell	Union	812	303	4	274	25
Plainview	Union	2,165	853	50	789	14
Blaine	Grainger	1,326	505	9	473	23
Total		4,303	1,661	63	1,536	62

Table 4-142. Housing and Sewage Disposal Practices of Select Communities in Subwatershed 060101040305.

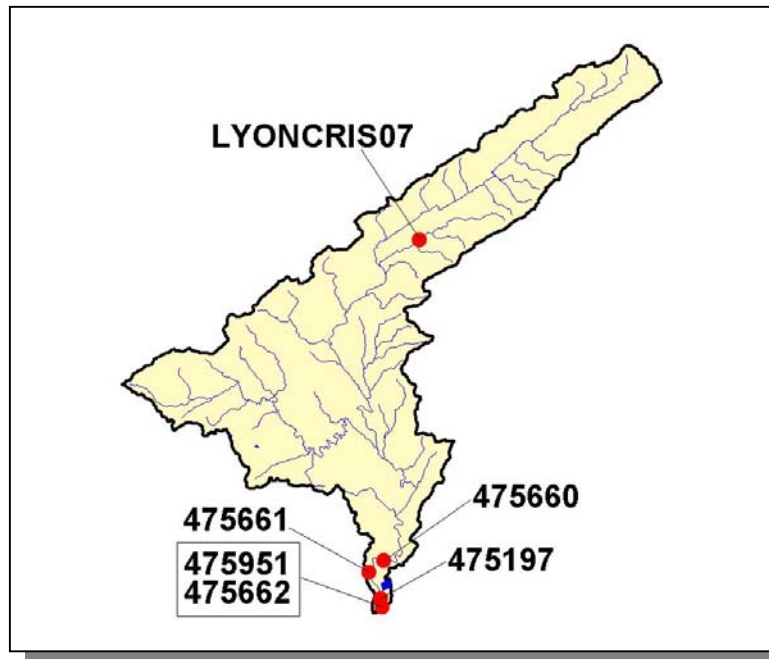


Figure 4-177. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 060101040305. More information, including site names and locations, is provided in Appendix IV.

4.2.C.v.a. Point Source Contributions.



Figure 4-178. Location of Permits Issued in Subwatershed 060101040305. More information, including the names of facilities, is provided in Appendix IV.

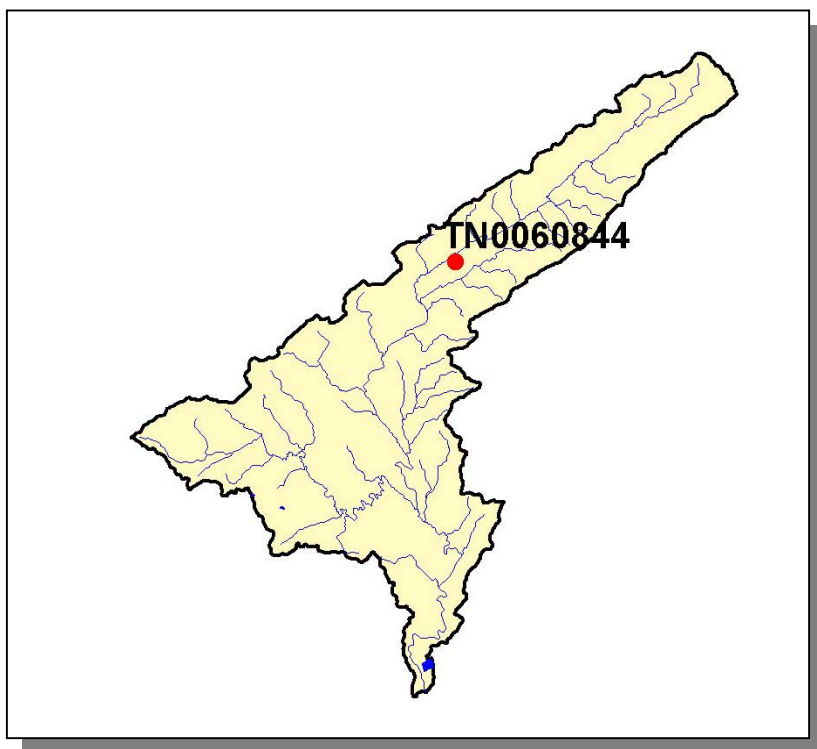


Figure 4-179. Location of Active Mining Sites in Subwatershed 060101040305. More information, including the names of mining operations, is provided in Appendix IV.



Figure 4-180. Location of Water Treatment Plants in Subwatershed 060101040305. More information, including the names of facilities, is provided in Appendix IV.

4.2.C.v.a.i. Dischargers to Water Bodies Listed on the 2004 303(d) List

There is one NPDES facility discharging to water bodies listed on the 2004 303(d) list in Subwatershed 060101040305:

- TN0074080 (Luttrell-Blaine-Corryton WTP) discharges to Little Flat Creek



Figure 4-181. Location of NPDES Dischargers to Water Bodies Listed on the 2004 303(d) List in Subwatershed 060101040305. More information, including the names of facilities, is provided in Appendix IV.

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PERMIT #	1Q10	3Q10	7Q10	3Q20	QDESIGN
TN0074080					

Table 4-143. Receiving Stream Flow Information for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 060101040305. Data are in million gallons per day (MGD). Data were obtained from the USGS publication Flow Duration and Low Flows of Tennessee Streams Through 1992 or from permit files.

PERMIT #	FLOW
TN0074080	X

Table 4-144. Monitoring Requirements for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 060101040305. MBAS, Methylene-blue-active-substances.

PERMIT #	AI	TSS	TRC	SETTLEABLE SOLIDS	pH
TN0074080	X	X	X	X	X

Table 4-145. Parameters Monitored for Daily Maximum Limits for NPDES Dischargers to Waterbodies Listed on the 2004 303(d) List in Subwatershed 060101040305. WET, Whole Effluent Toxicity; CBOD₅, Carbonaceous Biochemical Oxygen Demand (5-Day); TRC, Total Residual Chlorine; TSS, Total Suspended Solids.

4.2.C.v.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
3,729	7,342	226	11	202	147

Table 4-146. Summary of Livestock Count Estimates in Subwatershed 060101040305. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.

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LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Grainger	12,115	23,927	942	1,184	510	195
Knox	12,424	24,664	855	2,056	851	649
Union	5,540	10,575	105	981	93	96

Table 4-147. Summary of Livestock Count Estimates in Grainger Knox, and Union Counties. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.

County	INVENTORY		REMOVAL RATE	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Grainger	102.6	102.6	0.3	1.8
Knox	127.5	127.0	2.2	8.2
Union	102.5	102.5	0.1	0.0

Table 4-148. Forest Acreage and Annual Removal Rates (1987-1994) in Grainger, Knox, and Union Counties.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.79
Grass (Hayland)	0.69
Legumes, Grass (Hayland)	0.36
Grass, Forbs, Legumes (Mixed Pasture)	0.90
Corn (Row Crops)	2.59
Soybeans (Row Crops)	15.54
Tobacco (Row Crops)	7.21
Wheat (Close-Grown Cropland)	4.44
Farmsteads and Ranch Headquarters	0.27

Table 4-149. Annual Estimated Total Soil Loss in Subwatershed 060101040305.

4.2.C.vi. 060101040306 (Roseberry Creek).

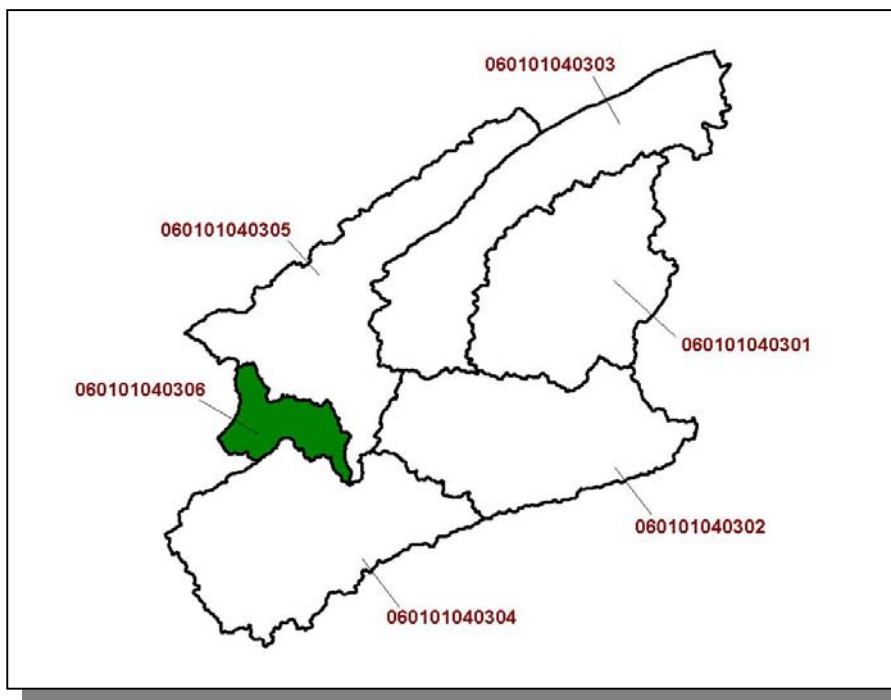


Figure 4-182. Location of Subwatershed 060101040306. All HUC-12 subwatershed boundaries are shown for reference.

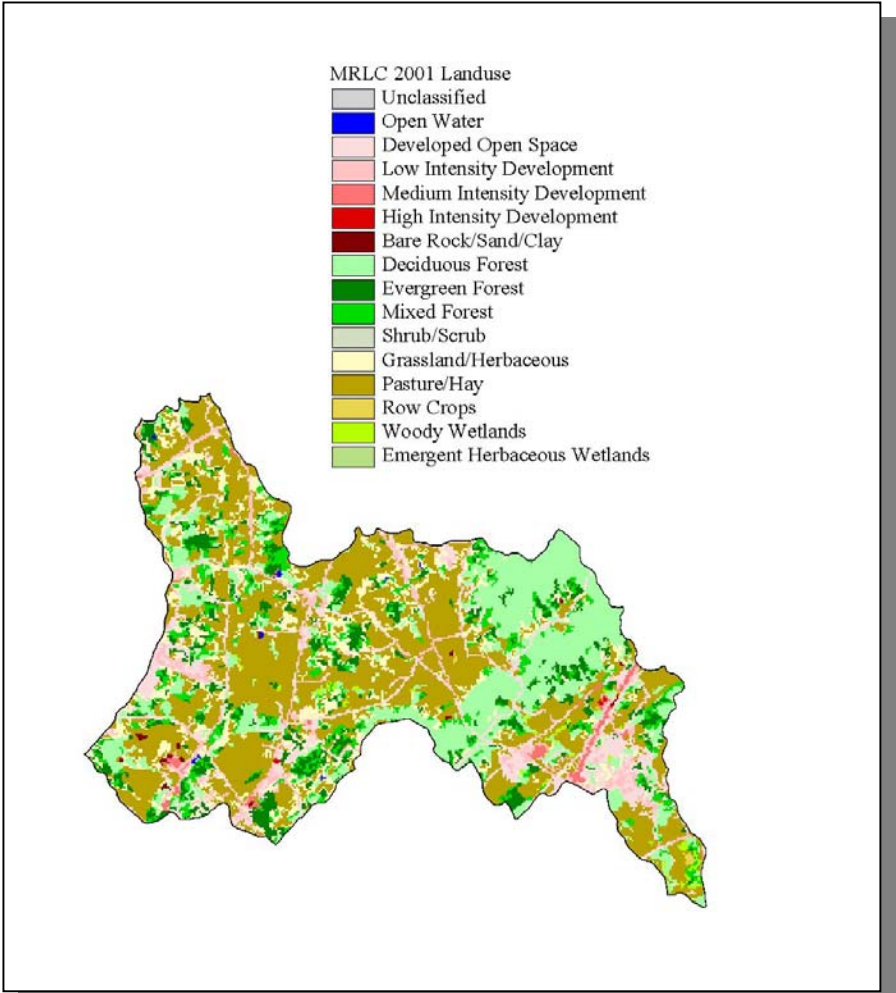


Figure 4-183. Illustration of Land Use Distribution in Subwatershed 060101040306.

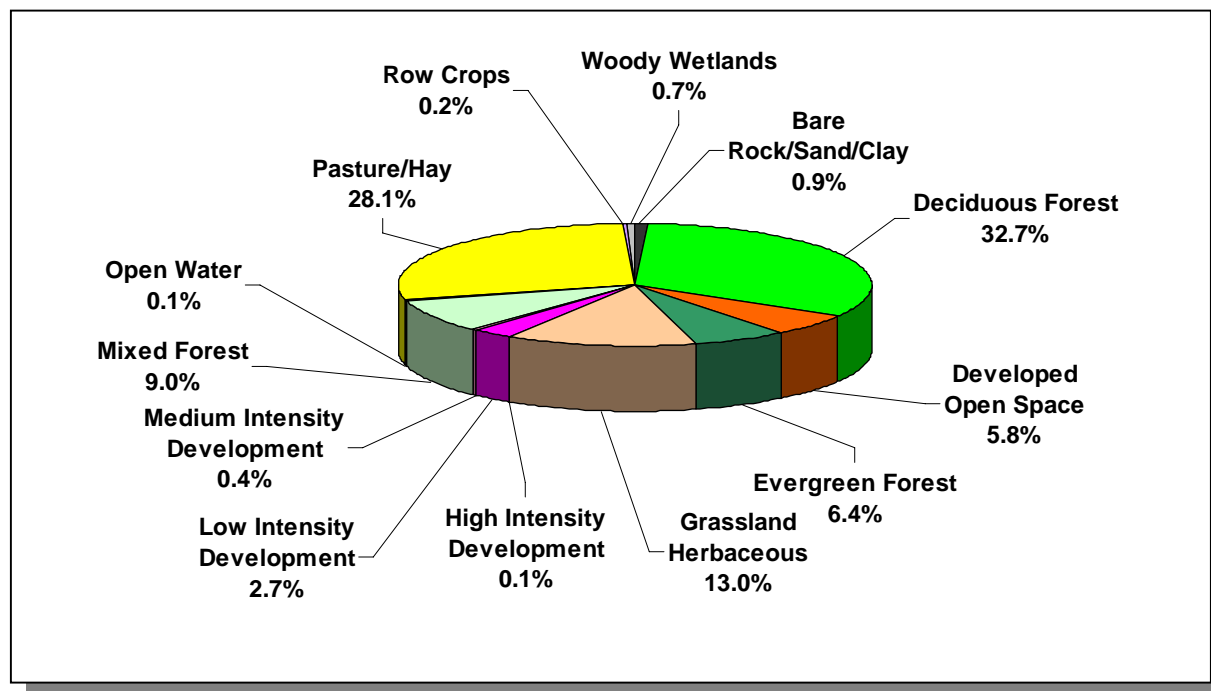


Figure 4-184. Land Use Distribution in Subwatershed 060101040306. More information is provided in Appendix IV.

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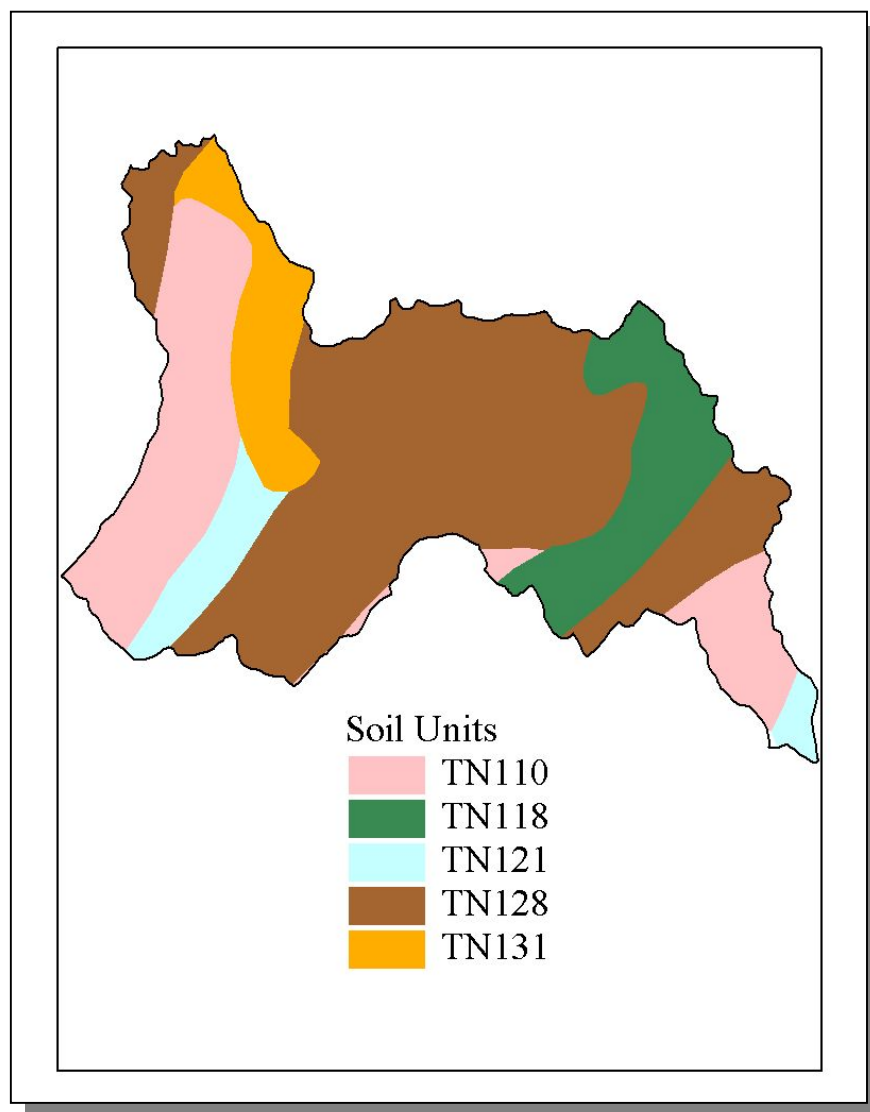


Figure 4-185. STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040306.

STATSGO MAP UNIT ID	PERCENT HYDRIC	HYDROLOGIC GROUP	PERMEABILITY (in/hour)	SOIL pH	ESTIMATED SOIL TEXTURE	SOIL ERODIBILITY
TN110	0.00	B	2.22	4.96	Loam	0.31
TN118	0.00	C	6.52	5.12	Loam	0.29
TN121	0.00	B	1.30	5.21	Loam	0.33
TN128	0.00	C	1.30	6.53	Clayey Loam	0.26
TN131	0.00	C	1.17	4.95	Silty Loam	0.33

Table 4-150. Soil Characteristics by STATSGO (State Soil Geographic Database) Soil Map Units in Subwatershed 060101040306. The definition of "Hydrologic Group" is provided in Appendix IV.

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County	COUNTY POPULATION			Portion of Watershed (%)	ESTIMATED POPULATION IN WATERSHED			% Change (1990-2000)
	1990	1997	2000		1990	1997	2000	
Knox	335,749	365,900	382,032	2.72	9,129	9,949	10,387	13.8

Table 4-151. Population Estimates in Subwatershed 060101040306.

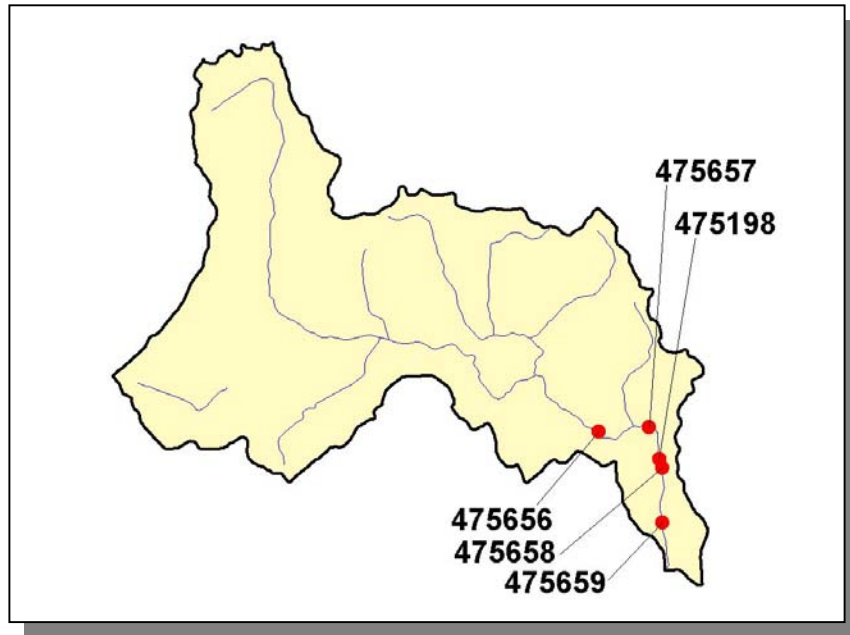


Figure 4-186. Location of Monitoring Sites in EPA's STORET Database in Subwatershed 060101040306. More information, including site names and locations, is provided in Appendix IV.

4.2.C.vi.a. Point Source Contributions.

There are no point source contributions in this subwatershed.

4.2.C.vi.b. Nonpoint Source Contributions.

LIVESTOCK COUNTS					
Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
939	1,864	65	<5	64	49

Table 4-152. Summary of Livestock Count Estimates in Subwatershed 060101040306. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.

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LIVESTOCK COUNTS						
County	Beef Cow	Cattle	Milk Cow	Chickens (Layers)	Hogs	Sheep
Knox	12,424	24,664	855	2,056	851	649

Table 4-153. Summary of Livestock Count Estimates in Knox County. According to the 1997 Census of Agriculture (<http://www.nass.usda.gov/census/>), "Cattle" includes heifers, heifer calves, steers, bulls and bull calves; "Chickens" are layers 20 weeks and older.

County	INVENTORY		REMOVAL RATE	
	Forest Land (thousand acres)	Timber Land (thousand acres)	Growing Stock (million cubic feet)	Sawtimber (million board feet)
Knox	127.5	127.0	2.2	8.2

Table 4-154. Forest Acreage and Annual Removal Rates (1987-1994) in Knox County.

CROPS	TONS/ACRE/YEAR
Grass (Pastureland)	0.90
Grass (Hayland)	0.12
Legumes, Grass (Hayland)	0.25
Grass, Forbs, Legumes (Mixed Pasture)	0.47
Corn (Row Crops)	1.10
Soybeans (Row Crops)	15.54
Wheat (Close-Grown Cropland)	4.44
Farmsteads and Ranch Headquarters	0.18

Table 4-155. Annual Estimated Total Soil Loss in Subwatershed 060101040306.